



FILE NO

SERVICE MANUAL

LED TV

LED-DP32242

PRODUCT CODE No.: 1-130-292-04

CHASSIS NO. :

SSD32TA-00/ P32242-02



REFERENCE No.:SM0945010-02

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Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire. Anti static measures to be taken (throughout the entire production process!):

- a) Do not touch here and there by hand at will;
- b) Be sure to use anti static electric iron;
- c) It's a must for the welder to wear anti static gloves.

Please refer to the detailed list before replacing components that have special safety requirements. Do not change the specs and type at will.

2. Points for attention in servicing of LCD

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to Use the screen of the original model for replacement.

2.2 The operation voltage of LCD screen is high voltage. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module That is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LCD please don't subject the LCD components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LCD TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LCD TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LCD screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen would be unable to work and no way to get it repaired.

If the connection wires, connections or components fixed by the thermo tropic glue need to disengage when service, please soak the thermo tropic glue into the alcohol and then pull them out in case of damage.

2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.

2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Scope for operation	0 ~+ 50 °C
	Scope for storage	-20 ~+ 60°C
Humidity	Scope for operation	20% ~ 90 %
	Scope for storage	5% ~ 90%

2.13 Display of a fixed picture for a long time may result in appearance of picture residue on the screen, as commonly called “ghost shadow”. The extent of the residual picture varies with the maker of LCD screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Points for attention during installation

3.1 The front panel of LCD screen is of glass. When installing it please make sure to put it in place.

3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.

3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect

3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.

3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

2. Alignment instructions

(1) Test equipment

VG-859 (YPbPr, VGA, HDMI signal generator)
FLUKE 54200(TV signal generator)
CA210 (white balancer)

(2) Power test

Connect main board, power board and IR board according the wiring diagram, connect the power and press power key (Remote controller or Keypad) button to turn on the TV.

a) Test the pin voltage of P802/power board , the data is shown in table1:

Table1 voltage data of P802

For32"										
P802	Pin1,2	Pin3,4	Pin5,6,7	Pin8,9	Pin10	Pin11,12	Pin13	Pin14	Pin15	Pin16
Voltage	GND	22.8-25.2V	GND	11.6-12.8V	NA	4.75-5.25V	On:2V-5.5V Off: 0-0.5V	<0.6V	2.5-5V PWM	2-5V

b) Test the pin voltage of P803/power board, the data is shown in table2:

Table2 voltage data of P803

For32"						
P803	Pin1,2,3,4,5	Pin6,7,8,9,10	Pin11	Pin12	Pin13	Pin14
Voltage	22.8-25.2V	GND	NC	2V-5V	2.5-5V PWM	NC

(3) Alignment flow-chart

The alignment flow-chart is shown as fig-1

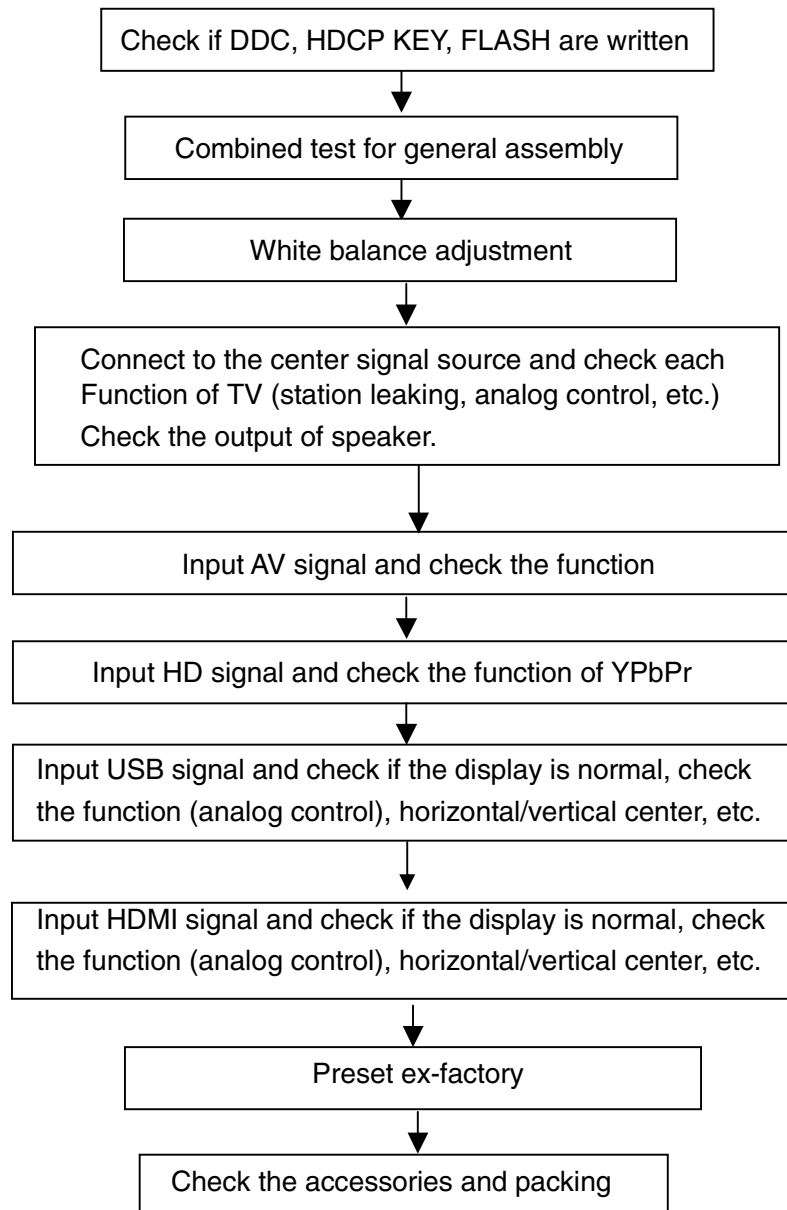


Fig-1 adjustment flow-chart

(4) Adjustment instruction

At any input source then press the “←”, “EXIT” and “OK” (Remote control) to enter factory mode

During Factory menu, if “MENU” key is pushed, system will exit factory mode.

(5) Items of Factory menu

When in PC/ Component/ Video (Composite)/ ANT inputs then press the “Left -> Exit -> OK” key of remote control to enter factory mode..

During Factory menu, if “MENU” or “EXIT” key is pushed, system will exit factory mode.

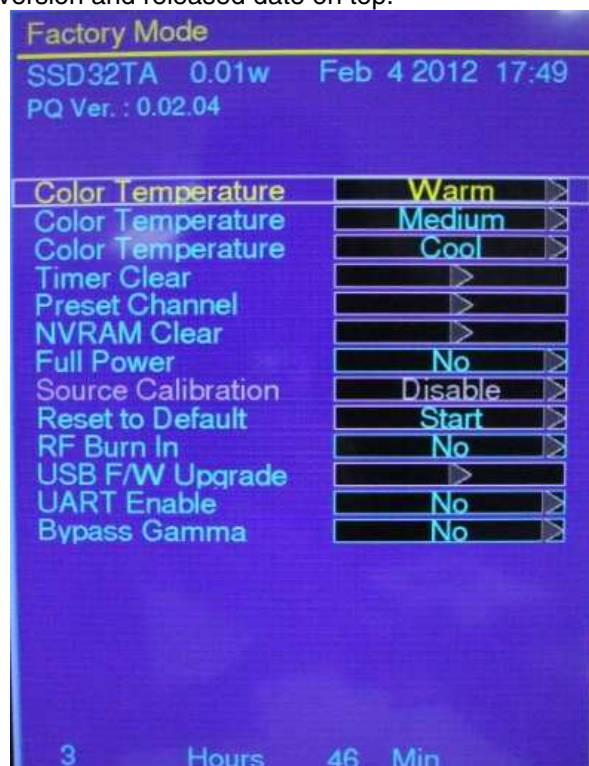
Press up and down key can move high light item from Color Temperature -> Timer Clear -> Preset Channel->NVRAM Clear-> Full Power -> Source Calibration -> Reset to Default -> RF Burn In -> USB F/W Upgrade -> UART Enable-> Bypass Gamma.

The Timer Clear, NVRAM Clear and Reset to Default items will have a check dialog “yes or no” to do or not.

Push “Enter” key can select high light item function. (Press left and right can adjust value)

Display panel Burn in Time on the bottom.

Display model name, firmware version and released date on top.



- 1) Factory Color Temp data edit
This is used for Factory adjusts color temperature. Don't change this value.
- 2) Timer Clear
Reset the timer which records hours of LCD panel burn in. (Don't clear timer after FW update.)
This item will have a check dialog “yes or no” to do or not.
- Time in factory mode: Time function shall be displayed automatically. Saving the total time of system power on (LCD turn on), and count the time automatically. The timer is continuous and saved (per 60 minutes) forever, unless it will be reset by doing “Timer Clear”.
- 3) Preset channel
Load preset channel for production line. (Refer 4.4.4 Preset channel table).
- 4) NVRAM CLEAR
Initialize program's default values to NVRAM for following adjustment items accuracy.
In factory mode it is the first and important step to make sure all values are default value and correct
- Reset settings: Gamma table, Channel table (Favorite channel, Channel label etc.), Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc), Closed Caption.
To avoid a mistake initial process after factory setting is done. This item will have a check dialog “yes

or no" to do the initial or not.

Notice:

After this item is processed then the DUT needs to be powered off then AC powered off.

- 5) Full power (For factory test only)
This is for power consumption testing.
To measure the maximum power consumption of TV set, we adjust the value of following items to maximum.
 - Video: Contrast maximum value, Brightness maximum value, Backlight maximum value.
 - Audio: Volume maximum value, Bass default value, Treble default value.Press enter key to turn on Full Power and OSD stay display until press enter key to recover from Full Power
- 6) Source Calibration (without correct machine).
Source Calibration (gain/offset) must be adjusted color by firmware automatic adjustment in PC, and Component input source.
This item will have a result dialog "OK" or "NG".
- 7) Reset to Default
Reset all settings of OSD menu to default value.
 - Reset settings: Channel table, Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc), Closed Caption.
 - Please execute Reset to Default once after FW is upgraded.
- 8) RF Burn In (For factory test only)
Use "snow" pattern for burn in. Selected items are "On" and "Off".
While turn on burn in mode, firmware will automatically turn off "Auto power off" function.
If there is no power supply suddenly, firmware will re-enter burn in mode automatically when power supply is back
Pressed the "Power" key, firmware will automatically turn off burn in mode.
Burn in mode: Source is "ANT/Cable" and channel is NTSC channel 3.
- 9) USB F/W Upgrade
- We don't recommend upgrade FW here. We recommend upgrade FW in normal power on status (not in factory menu), just plug in USB with correct FW file name. (Refer to item 7)
Upgrade firmware through USB.
- 10) UART Enable (For factory test only)
Enable to communicate with Auto-Alignment system.
- 11) Bypass Gamma
For factory test value of gamma.

(6) Performance check

6-1 TV function

Connect RF to the center signal source, enter Channel menu → auto tuning, check if there are channels be skipped, check if the picture and speaker are normal.

6-2 AV terminals

Input Video signal, check if the picture and sound are normal.

6-3 YPbPr terminal

Input YUV signal (VG859 signal generator), separately input the YUV signals listed in table4 and check if the display and sound are normal at any situation (power on, channel switch and format convert, etc.)

Table4 YUV signal format

MODE	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
	LINE(kHz) FRAME (Hz)	LINE (pixel) FIELD (lines)	LINE FIELD	(MHz)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)
	15.734	1716	Negative	27	1440	124	114

59.94Hz 720x480i	59.94	525	Negative		480	3	15
59.94Hz 720x480P	31,469	858	Negative	27	720	62	60
	59.94	525	Negative		480	6	30
60Hz 1280x720P	45	1650	Positive	74.25	1280	40	220
	60	750	Positive		720	5	20
60Hz 1920X1080i	33.75	2200	Positive	74.25	1920	44	148
	60	1125	Positive		1080	5	15
60Hz 1920X1080P	67.5	2200	Positive	148.5	1920	44	148
	60	1125	Positive		1080	5	36

6-4 HDMI terminal

Input HDMI signal (VG859 signal generator), separately input the signals listed in table6 and check the display and sound (32 KHz, 44.1 KHz, 48 KHz) at any situation (power on, channel switch and format convert, etc.)

Table6 HDMI signal format

FREQ	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
MODE	LINE(kHz) FRAME(Hz)	LINE (pixel) FIELD(lines)	LINE FIELD	(MHz)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)
VGA 60Hz 640x480	31.469	800	Negative	25.175	640	96	40
	59.94	525	Negative		480	2	25
SVGA 60Hz 800x600	37.879	1056	Positive	40	800	128	88
	60.317	628	Positive		600	4	23
XGA 60Hz 1024x768	48.363	1344	Negative	65	1024	136	160
	60.004	806	Negative		768	6	29
WXGA 60Hz 1280x768	47.776	1664	Negative	79.5	1280	128	192
	59.87	798	Positive		768	7	20
WXGA 60Hz 1360x768	47.712	1792	Positive	85.5	1360	112	256
	60.015	795	Positive		768	6	18
59.94Hz 720x480i	15.734	1716	Negative	27	1440	124	114
	59.94	525	Negative		480	3	15
59.94Hz 720x480P	31.469	858	Negative	27	720	62	60
	59.94	525	Negative		480	6	30
60Hz 1280x720P	45	1650	Positive	74.25	1280	40	220
	60	750	Positive		720	5	20
60Hz 1920X1080i	33.75	2200	Positive	74.25	1920	44	148
	60	1125	Positive		1080	5	15
60Hz 1920X1080P	67.5	2200	Positive	148.5	1920	44	148
	60	1125	Positive		1080	5	36
24Hz 1920x1080P	27	2750	Positive	74.25	1920	44	148
	24	1125	Positive		1080	5	36

6-5 other functions check

- a) Check the turn on/turn off timer, sleep timer, picture/sound mode, OSD, stereo and analog TV Teletext, etc.

(7) USB Software updated

- (1) Insert the USB with the firmware which the file name is matched with the model name in factory mode.
- (2) If system detect the same firmware file name, USB upgrade message would appear automatically.
- (3) Press Left key to select Yes, and then press OK key to start the upgrading.
- (4) Upgrading is starting, please wait for the progress finish.
- (5) When the progress completed, please follow the instruction to remove USB and restart by AC off then on.

3. Working principle analysis of the unit

1. NTSC signals flow:

Antenna signal will be send to tuner ENV56U05D8F, then Tuner will be demodulating and output standard video signal TV-CVBS, and sound SIF signal.

TV-CVBS will send to the master control IC ZR39748 to video decode, de-interlace and scaler, then output LVDS level drive for panel display.

The sound IF (SIF) will be fed into ZR39748, after demodulating, pre-amplifying, bass adjusting and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

2. Composite/Component signal flow

Composite signal and Component signal will be fed to ZR39748 to perform video decode, de-interlace and scaler, then output LVDS drive level for panel display.

Audio signal from Composite/Component terminal via matched resistance is fed to ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

3. HDMI signal flow

Two HDMI video signals are directly fed to the master control IC ZR39748 to digital decode, image scale, then output LVDS drive level for panel display. HDMI audio signal via decoder built-in ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

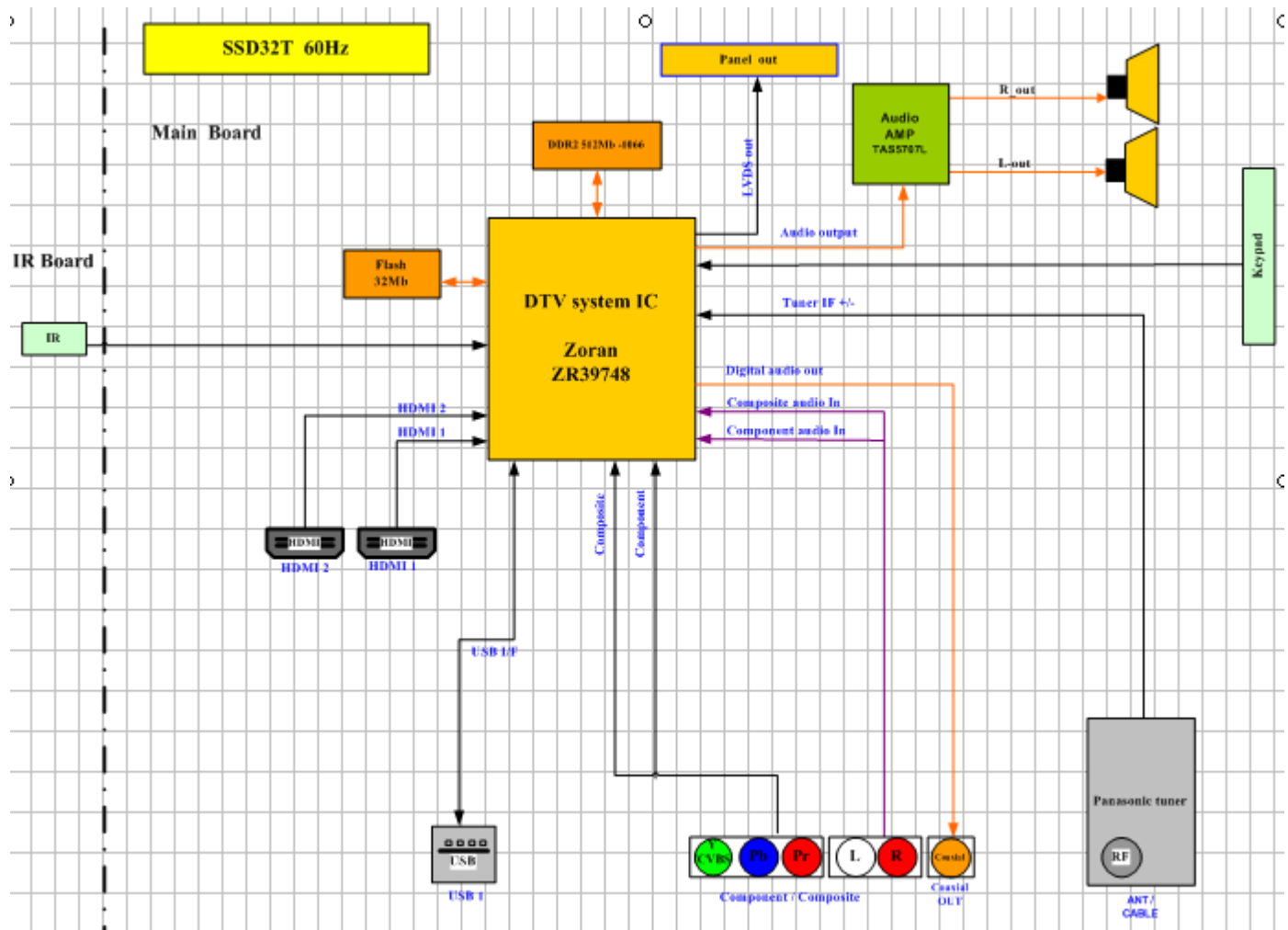
4. USB signal flow

USB signal via USB connector sent to ZR39748 and its A/D conversion to YPbPr output for ZR39748, then output R/G/B of 24 bit to back end module to Video decode, de-interlace and image scale, then send to LVDS level drive for panel display.

Sound signal of USB signal via matched resistance and sent to ZR39748 to bass adjust and volume control, the sound signal will be transform into digital I2S signal and sent to digital amplifier TAS5707L.

4. SSD32T Block Diagram

4-1 Block Diagram



a. FSP(1st source) power block diagram.



Chicony
POWER TECHNOLOGY

Model Name: N112R001L

Prepare By: Eason Chu

Approve By: Jackie Lu



5. IC block diagram

1. Zoran ZR748

- **Integrated Digital & Analog Demodulator**

- 8VSB/QAM-B
- NTSC/BTSC/A2K

- **Video Inputs**

- Three (3) 1080p HDMI (v1.4a/DC)*
- One (1) 1080p YPbPr
- One (1) VGA, up to WUXGA resolution
- Two (2) CVBS*, One (1) S-Video

- **Audio Inputs**

- Five (5) stereo L/R line-level*

- **Internal Video/Audio Processing**

- NTSC video decoder
- MPEG-2 decoder
- 10-bit video processing
- 1080i motion-adaptive de-interlacer
- ACM-2D color processor
- Graphics blending/overlay
- Audio DSP

- **Video Outputs**

- Dual-channel LVDS (1080p, up to 10bpp)
- miniLVDS & RSDS (6/8bpp, up to 330MHz)
- LCD panel timing control signals (TCON)

- **Audio Outputs**

- One (1) stereo L/R DDX differential
- One (1) stereo L/R single-ended DDX
- Optional up-to-four (4) more single-ended DDX
- Optional up-to-three (3) I2S stereo pairs
- One (1) S/PDIF

- **System Processors & Interfaces**

- 300MHz system CPU
- TV microcontroller for standby mode
- One (1) USB 2.0

- **External SPI Flash Memory: 2-16MByte**

- 2-4MB typical for ATSC DTV application

- **External 16-bit DDR2 Required**

- DDR2-800 for most design configurations
- DDR2-1066 for 1080p with overdrive designs

- 64MByte typical for most designs

- **Power**

- 1.1V core voltage, 1.8V memory I/F, 3.3V I/O

- **Two Package Options**

- 365-ball BGA, 23x23mm²
- 256-pin LQFP with e-pad, 28x28mm²

(*) Slight variation of support with QFP package

1.1. SupraHD® 748 IC Description

The SupraHD® 748 is a member of the SupraHD® family of DTV system-on-chip (SoC) developed by Zoran. This device is intended to be used in ATSC high-definition digital television implementations. This device includes all of the functionality required to support the television implementations shown in the following block diagrams.

Figure 2 shows a typical ATSC system implementation using the SupraHD® 748.

Figure 3 shows the detailed block diagram of the SupraHD® 748.

Figure 4 shows the video and audio input/output options of the SupraHD® 748.

1.2. SupraHD® 748 Features

The following sub-sections list the features of the SupraHD® 748 per category. Note that features unique to the BGA package are indicated with a “(BGA package)” designation while QFP package features are indicated with “(QFP package)”.

1.2.1. Embedded Processing Unit

- **High performance CPU**

- Integrated high-performance MIPS® 4KEc™ CPU operating at 300MHz
- 32-bit MIPS32 enhanced architecture
- 8 K instruction cache, 8 K data cache, (2-way set associative)
- Programmable memory management unit
- Multiply/Divide unit

- **Power-down mode (triggered by WAIT instruction)**

- **EJTAG debug support**

- **Fully production-tested software suite**

- ATSC/NTSC DTV application with customizable OSD
- V-Chip for analog and digital channels
- PSIP parsing for channel map and EPG
- Analog and digital closed-captioning (EIA-608 and EIA-708)

- Royalty-free Zoran True Fonts for OSD and closed-captioning
- Transport, video decode (single MP@HL), audio decode (AC-3, MPEG Layer I & II), graphics, and display drivers
- Drivers for tuner, HDMI and analog inputs
- ThreadX royalty-free RTOS

1.2.2. Video Processing

• Image processing

- Up to 10-bit processing
- De-interlacing
 - 1080i capable, per-pixel motion adaptive, multiple cadence detection, 8° low-angle interpolation
- Black bar detection
 - Horizontal and vertical

• Image quality enhancements

- Noise reduction (up to 1080p)
 - Temporal
 - Spatial
 - Impulse
- MPEG post-processing
 - De-blocking
- Adaptive contrast control (histogram-based, fully-programmable)
- Advanced Color Management 2D
- Horizontal luma peaking with coring
- Sharpness control
 - Vertical and horizontal LTI
 - Horizontal CTI
 - Y/C vertical peaking with adaptive coring

• Video scaling and composition

- Horizontal scaler
 - 17-tap FIR, 64-phase FIR
 - Programmable up scaler [64x]
 - Waterglass scaler
 - Programmable down scaler [1/32x]
 - Non-linear scaler - 3-segment parabola, 17-tap FIR, 64-phase FIR
 - Letterbox support
 - Pan and Scan support
 - 10-bit processing

- Vertical scaler
 - 5-tap FIR, 64-phase FIR
 - Programmable up scaler [64x]
 - Programmable down scaler [1/32x]

1.2.3. Video Input

• Integrated HDMI link and PHY

- Three physical ports (BGA package)
 - One physical port (QFP package)
- Single instance of the PHY
- HDMI v1.4a-compliant
- Supports up to 1080p input resolution
- Standby power CEC monitor
- Supports all DTV resolutions (480i/576i/480p/576p/720p/1080i/1080p)
- Capable of carrying IEC61937 compressed audio (Dolby Digital, etc.)
- Integrated High-bandwidth Digital Content Protection (HDCP) cipher
- Direct capture of video, audio, and control information in distinct memory buffers

• Integrated high definition (HD) capture/video inputs

- Color space conversion
- Downscaling to either 4:2:2 or 4:4:4 output to memory
- One (1) YPbPr input
 - Up to 165MHz sample rate (Up to 1080p)
 - Sync Modes: sync on green (SOG) or luma (SOY) input, mid-point and sync tip clamping
 - SOG or SOY inputs: AC coupled
 - Low pass filter (500 KHz)
 - Dynamic range 0.5-2.0V
 - >1MΩ DC input impedance
 - Coast input and support
 - Activity/polarity detectors with timing measurement HSYNC present
 - VSYNC present
 - SOG/SOY present
- 2nd YPbPr input available using S-Video and SIF lines (BGA package)
- One (1) RGB input
 - Separate HSYNC, VSYNC inputs
 - TTL level-compatible
 - Up to WUXGA (1920x1200x60Hz with reduced blanking)
 - Support for 10-bit processing
- Up to 165 MHz input bandwidth

- **Standard definition (SD) video inputs**

- Two (2) CVBS inputs (BGA package)
 - One (1) CVBS input (QFP package)
- One (1) S-Video input
- No low-pass filter (LPF) required on SD inputs

1.2.4. Video Output

- **Gradient recovery**

- Up to 10-bit output for 8-bit video input

- **Overdrive**

- Improves LCD response time
- Proprietary Zoran scheme for applying overshoot/undershoot pixel values

- **Display processor**

- Main output display formats include 1920x1080p, 1680x1050p, 1440x900p, 1366x768p, 1280x768p, 1280x720p and 1024x768p
- Panel frame rate up to 60Hz support for 1920x1080 panel resolution
- Output can support 6, 8 or 10-bit panels
- EIA-608 and EIA-708 closed caption support
- Horizontal and vertical flip support

- **Integrated dual-channel LVDS output for direct panel display support**

- Supports up to 165MHz (see below for miniLVDS speed)
- 1080p output flat panel support
- 6, 8 and 10-bit panel support
- Programmable PWM backlight control
- Spread spectrum clock generation
 - $\pm 6.25\%$ clock modulation

- **Integrated Timing Controller (TCON) for direct panel timing control**

- Up to 11 user-programmable timing control signals to drive source and gate drivers
- Fail-safe circuit to protect panel from off-spec timing
- miniLVDS dual-channel output with TCON signals activated
 - 330MHz single-channel miniLVDS support with TCON signals activated
- RSDS single-channel output with TCON signals activated (BGA package)

1.2.5. Audio Processing and I/O

- **Five (5) L/R line-level stereo inputs**

- Multiplexed into a single stereo ADC
 - 16-bit A/D conversion

- 82dB dynamic range and -75dB THD A/D conversion
- Supported audio sampling rates from 32 to 96 KHz
- **Up to six (6) channels of audio output, on DDX or I2S lines**
 - Two (2) DDX differential speaker outputs for direct power-stage drive (channels 0-1)
 - Or four (4) single-ended DDX for analog output (channels 0-3)
 - Or one (1) stereo I2S output (channels 0-1) I2S data aligned in I2S format; Contact Zoran for left-justified format support
 - Two (2) single-ended DDX for line-out (channels 2-3)
 - Or two (2) single-ended DDX for analog output (channels 4-5 – only when channels 0-3 are enabled)
 - Or two (2) stereo I2S outputs (channels 2-5 – only when I2S channels 0-1 are enabled) I2S data aligned in I2S format; Contact Zoran for left-justified format support
- **I2S audio lines (shared with DDX) can be used as inputs**
 - Six (6) channel I2S input (3 stereo I2S pairs), data aligned in I2S format; Contact Zoran for left-justified and right-justified formats support
- **One (1) S/PDIF output**
- **Audio decode performed in either/both the audio DSP and CPU**
 - Audio DSP allows for a significant level of audio post-processing
 - L/R downmix for standard stereo digital or line-level output
 - Algorithms available for the following:
 - Dolby® AC-3 Class A
 - MPEG audio Layer 1 (ISO-13818-3)
 - “Musicam” MPEG audio Layer 2 (ISO-13818-3)
 - MP3 MPEG audio Layer 3 (ISO-13838-3)
 - Tone generation
 - Post-processing 3D surround & Dialog Clarity (SRS TruSurroundHD™, QSurround)
 - Post-processing bass and treble control (Audyssey® ABX)
 - Post-processing automatic volume control (Audyssey® AVL)
 - Post-processing 5-band equalizer (Audyssey® AEQ)
 - Supports audio and video PTS synchronization
 - Stores processed streams in memory for playback using APU
- **Audio Processing Unit (APU)**
 - Single independent integrated APU unit
 - Audio playback from unified memory
 - Audio select, mix, cross-fade, and attenuate all audio sources
 - Supports multiple serial data formats
 - Supports sample rates up to 96 KHz
 - IEC-958 output of encoded or PCM audio data

1.2.6. Video Decoders

- **MPEG MP@HL decoder**

- Decode of a single HD (MP@HL) stream
- Decodes of ISO-13818-2 MP@ML, MP@HL
- Decode of all ATSC-compliant formats
- Slice-level and frame-level error concealment
- The decoder engine can decode MPEG-compressed bitstreams as defined in the following specifications:
 - ISO/IEC 13818-2, "Information Technology - Generic Coding of Moving Pictures and Associated Audio Information: Video," (Up to MP@HL)
 - A/53, "ATSC Digital Television Standard," (Table 3)
 - DTVMDB04, "DIRECTV MPEG-2 Video Bitstream Specification for the IRD"

- **Integrated NTSC decoder**

- 3D adaptive comb filter
 - Eliminates dot crawl from vertical or horizontal transitions
 - Eliminates dot crawl from single pixel lines
 - Eliminates false color from high frequency horizontal luma
 - Performs ideal YC separation for still image
 - No loss in horizontal or vertical chroma detail
 - No loss in horizontal or vertical luma detail
 - Performs well both on real video images and on test patterns

- **Adaptive horizontal PLL**

- Automatically adjusts loop bandwidth for signal conditions
- Automatically detects VCR source and enters optimum tracking mode; most decoders require a "VCR mode" bit to be set to optimally handle VCR signals
- Automatically detects VCR special effects mode and compensates
- Comb filter automatically disabled when VCR source is detected
- **Robust sync and DC setup acquisition**
 - DC setup and sync recovery is very robust even in the presence of noise, ghosting, and unlock condition
 - Automatic switch over to "fine" mode operation once rough lock is acquired
- **Chroma edge enhancement**
 - Improves the horizontal transition of the chroma edge
- **VBI decoder**
 - Performs VBI data capture and data slicing embedded in the video lines (composite, S-Video, analog RF input)

- **JPEG decoding**

1.2.7. Front-End Demod / Demux

• Integrated 8VSB/QAM-B demodulator

- ATSC 8-VSB demodulation
 - Enhanced 8-VSB multi-path performance with wide equalizer coverage
 - Superior VSB indoor reception using enhanced equalization and synchronization algorithms, enabling Brazil and other 0 dB ghost reception
 - Adaptive control loops dependent upon channel conditions for fast channel acquisition and optimal tracking
 - Advanced doppler ghost rejection
- QAM-B demodulation
 - ANSI/SCTE 07, ITU-T J.83 Annex B 64-/256-QAM, 5.06/5.36 Msymbol/sec rate, respectively
 - Support all DI modes up to I=128, J=8
 - 84-tap equalization range: 36 FFE and 48 DFE for superior cable micro-reflections rejection
 - Enhanced phase noise rejection
 - Excellent burst noise and combined distortion rejection
 - Exceptional AM noise rejection
 - Fast channel auto search based on auto 64-/256-QAM detection and wide carrier acquisition range
- Advanced system functions
 - Accepts 44 MHz from the tuner, eliminating external base-band demodulation
 - IF AGC PWM output
 - All digital recovery loops
 - FEC statistics, receiver status, and channel data such as S/N ratio, equalizer taps, carrier offset, and more are available
- Adaptive selection of receiver
 - Adaptive recovery loops based on channel conditions are used to achieve optimum reception for both high doppler echoes conditions and 0dB conditions
 - The synchronization and the equalization algorithms are based on both training signals and blind data
 - It enables better channel tracking – resulting in achieving all A74 requirements
- Fast channel acquisition in 0dB conditions, < 0.5sec.
- Improves immunity to noise for Brazil ensembles over previous Zoran devices
- Improved phase noise rejection in 0dB conditions

• NTSC demodulator

- Fully programmable digital video frequency and group delay equalization including internal digital Nyquist filter and excellent sound carrier digital rejection (>60dB)
- Digital carrier recovery (AFT) with accurate report to host
- Digital carrier recovery without quadrature distortions

- Excellent (110%) over modulation at all white signal (100IRE)
- Digital video IF AGC and optional delayed tuner AGC with programmable take over point
- AM interference rejection

• **BTSC/A2 demodulator**

- BTSC mono, stereo and SAP DBX decoding for US NTSC TV reception
- A2 mono, stereo and bilingual decoding for Korea NTSC TV reception

• **TS demultiplexer**

- Maximum transport bitrate: 80 Mbit/sec
- ISO-13818-1 compliant
- Supports PID filtering - total number of simultaneous PID filters: 32
- ATSC-compliant transport demultiplexer
- Maximum filtered (output) demux bit rate of 80 Mbits/sec
- PCR locking using internal STC counter and VCXO control

• **Demodulator inputs**

- One (1) differential IF pair for all tuner formats
- One (1) SIF (sound IF) for audio-only formats

1.2.8. Memory Support

• **16-bit DDR2 interface (400MHz or 475 MHz)**

- Up to 1.87 GByte/second peak memory throughput
 - 400MHz DDR2 sufficient for WXGA designs
 - 400MHz DDR2 sufficient for 1080p designs without TCON/overdrive
 - 533MHz DDR2 (clocked at 475MHz) sufficient for 1080p designs with TCON/overdrive
- Up to 128 MBytes maximum memory
 - Typical 64MByte system implementation for WXGA and 1080p designs
- High performance arbiter with assignable client priorities
- SSTL-18 Class 1 electrical interface

• **Serial FLASH**

- 40MHz SPI clock
- Up to 16 MBytes maximum memory
- Typical 2-4 MByte system implementation

1.2.9. Integrated TV MicroController

- Support for “Sleep” mode operation
- Front panel I/O support (buttons and display)

- **IRR input**
- **General-purpose 8-bit ADC with 5 multiplexed inputs**
 - i.e. Voltage monitoring
- **Sleep timer**
- **Watchdog timer**
- **GPIO interrupt control**
- **Support for A/V input monitoring**
 - Monitors the HDMI inputs for activity
- **Integrated EDID memory for HDMI inputs and VGA inputs**
 - 512 bytes memory x 4 input ports
- **Support for automatic VGA signal detection and wake-up**
- **HDMI CEC support**
- **UART for debug**
- **Real-time clock support**

1.2.10. Graphics Processing

- **32-bit RGB / YCbCr**
- **16-bit RGB**
- **8-bit indexed with CLUT**
- **Graphics Block Transfer (BLT)**
 - Supports copy, bit depth conversion and alpha blending of 8-, 16- and 32-bit pixel maps with 32-bit output
 - Supports Porter-Duff alpha blending formulas
 - Alpha destination and alpha compare
 - Point, Line, Rectangle, Text and Trapezoid Draw functions
 - Rectangle Fill function

•Graphics Unit Scaler (GUS)

- Support scaling and blending of several graphics planes in a single operation
- Can also perform simple BLT operations (BitBlit, stretch BitBlit, trapezoid BitBlit, mirror BitBlit, rotate BitBlit)
- **Color space converter**
- **Raster Operation (ROP)**

1.2.11. System Interfaces

- **Two (2) PWM outputs**
- **Three (3) 2-signal UARTs**
 - Maximum baud rate: 115200
 - 16550 compatible
 - Third UART is allocated to TVuC and shared with main CPU UART

- **Two (2) I2C master or slave interfaces**

- Maximum bitrate: 400 Kb/s
- Master or slave mode

- **One (1) IR receiver, with hardware demodulation**

- **SPI interface**

- Up to 40 MHz clock rate
- Supports serial FLASH up to 16 MByte
- Two (2) select signals for peripheral support

- **Integrated USB interface**

- One High Speed USB v2.0 port

1.2.12. Security Features

- **Integrated One Time Programmable memory (OTP)**

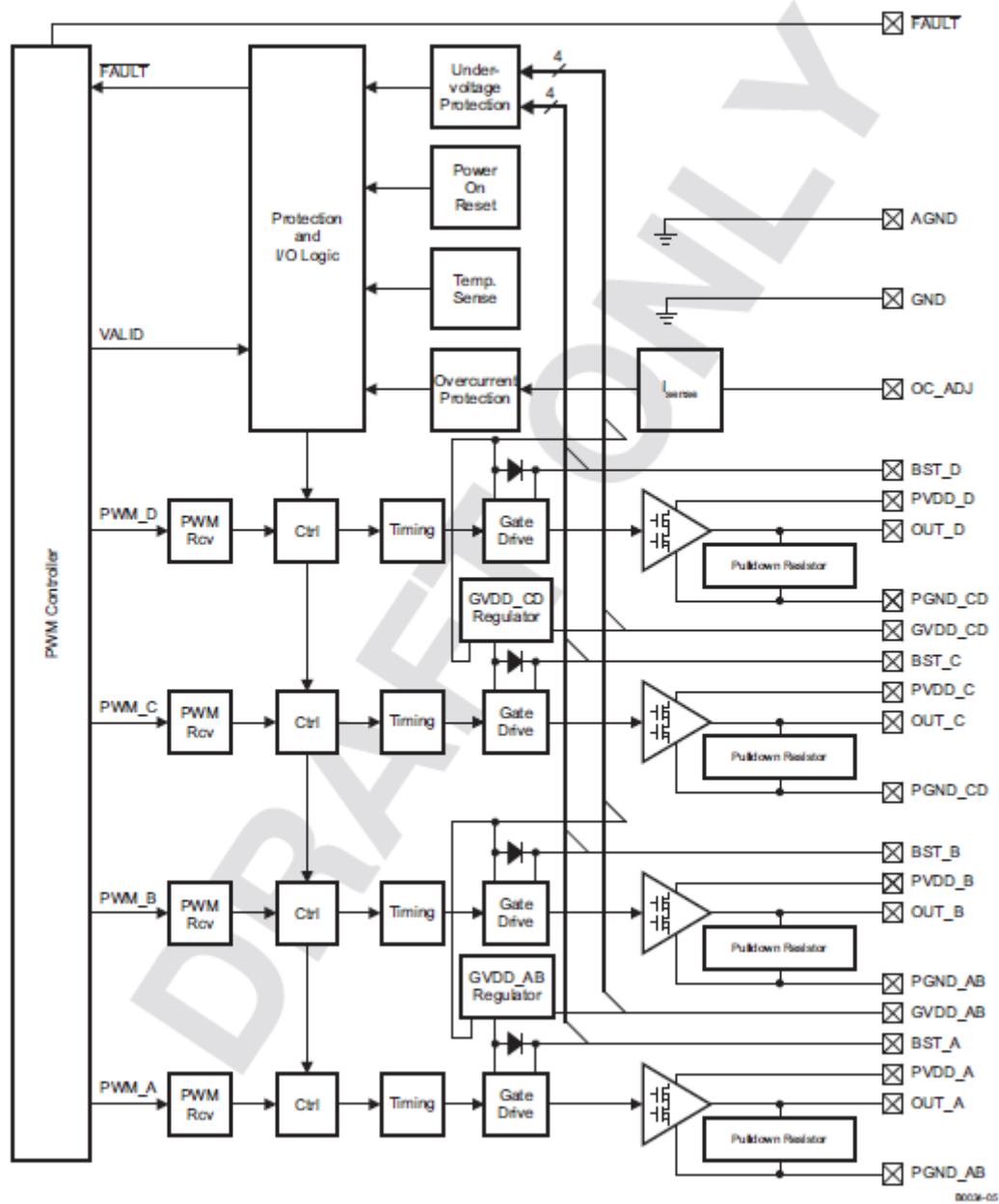
- 8 Kb of One Time Programmable (OTP) secure memory
- Used for secure storage:
 - HDCP Key Selection Vectors (KSVs)
 - Error Correction (ECC) Checksum and data
- Readable ONLY by specific IROM instructions programmed into the SupraHD® 748
- HDMI keys are encrypted with a proprietary Zoran encryption algorithm during the programming process

1.2.13. Misc. IC Information

- **25.000 MHz crystal input required to support standard ATSC timing**

2. TEXAS INSTRUMENTS TAS5707L

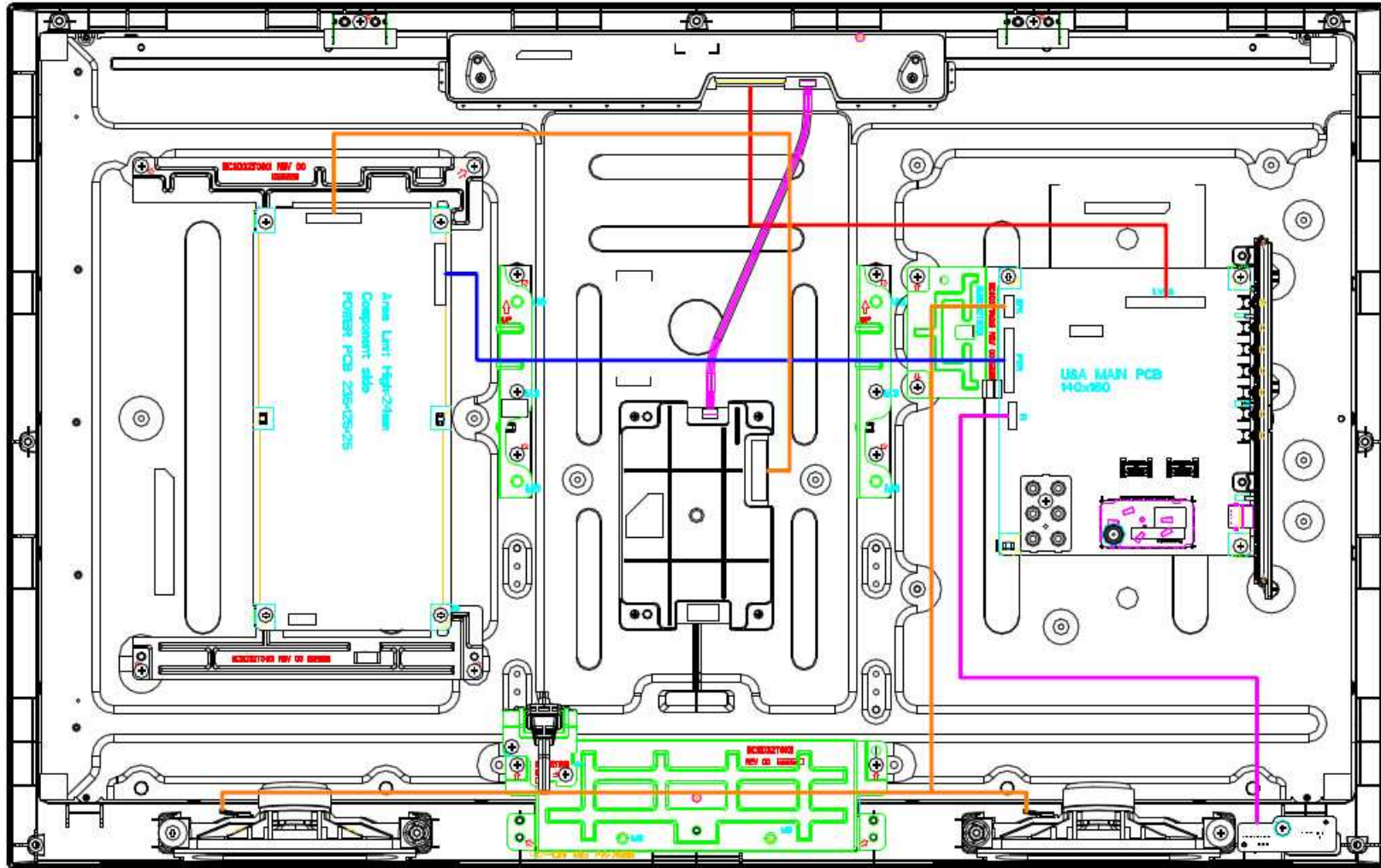
20-W STEREO DIGITAL AUDIO POWER AMPLIFIER



00034-05

6. SSD32T 32-inch Wiring Diagram

I. BLOCK



II. Wiring Connection

SAMSUNG panel

Main board to Panel		
SSD32T DC02L00410I 310 mm		
Panel side		Main board CN17
IS 100-L300-C23	LVDS cable	A2006WV0-2X20P
1 VIN	RED	1 LVDS_PWR
2 VIN	RED	2 LVDS_PWR
3 VIN	RED	19 LVDS_PWR
4 VIN	RED	20 LVDS_PWR
5 NC	NC	
6 GND	NC	
7 GND	NC	
8 NC	NC	
9 LVDS_SEL	YELLOW	3 LVDS_SEL
10 NC	NC	
11 GND	NC	
12 LV0_N	YELLOW	14 LVDS_D00_N
13 LV0_P	WHITE	13 LVDS_D00_P
14 GND	NC	
15 LV1_N	RED	12 LVDS_D10_N
16 LV1_P	WHITE	11 LVDS_D10_P

Main board to Speaker		
SSD32T DC02V03730I L:330 & R:730 mm		
Main board CN3		Speaker
JWT A2001WV2-4P	Color	LEFT
1 SPK_OUTL+	BLACK	P3 Speaker -
2 SPK_OUTL-	RED	P2 Speaker +
		Right
3 SPK_OUTR-	WHITE	P4 Speaker +
4 SPK_OUTR+	GREEN	P5 Speaker -

Main board to IR board		
SSD32T DC02V03720I 330 mm		
IR board CN1		Main board CN4
JWT A2001WR2-5P	Color	JWT A2001WR2-5P
1 VCC5_0_STB	Red	1 VCC5_0_STB
2 IRR	White	2 IRR
3 GND	Black	3 GND

17	GND	BLACK	4	GND
18	LV2_N	ORANGE	10	LVDS_D2O_N
19	LV2_P	WHITE	9	LVDS_D2O_P
20	GND	BLACK	17	GND
21	LVCLK_N	BROWN	16	LVDS_CO_N
22	LVCLK_P	WHITE	15	LVDS_CO_N
23	GND	BLACK	18	GND
24	LV3_N	BLACK	8	LVDS_D3O_N
25	LV3_P	WHITE	7	LVDS_D3O_P
26	GND	NC		
27	NC	NC		
28	NC	NC		
29	NC	NC		
30	GND	NC		

3	LED_R	Orange	4	LED_R
5	Light Sensor	NC		

Power/B to Main board		
SSD32T DC02P01590I 370 mm		
Power/B P802		Main board CN2
A2008H00-16P	Color	A2001H02-16P
1 GND	Black	1 GND
2 GND	Brown	2 GND
3 24Va	--	3 Audio power
4 24Va	Orange	4 Audio power
5 GND	Yellow	5 GND
6 GND	Green	6 GND
7 GND	Blue	7 GND
8 12Vcc	--	8 12V panel
9 12Vcc	Gray	9 12V panel
10 NC	--	10 5V standby
11 5Vcc	Black	11 5V standby
12 5Vcc	--	16 BL_ERROR
13 PW_ON	Red	12 PW_EN
14 ACD	Orange	13 PG
15 DIM	Yellow	15 BL_DIM
16 BL_ON	Green	14 BL_EN

Power/B to Panel Inverter/B		
SSD32T DC02P01250I 400 mm		
Power/B P803		Panel BL
A2008H00-14P	Color	A2001H02-14P
1 24Vcc	Black	1 24Vcc
2 24Vcc	--	2 24Vcc
3 24Vcc	Red	3 24Vcc
4 24Vcc	--	4 24Vcc
5 24Vcc	--	5 24Vcc
6 GND	Green	6 GND
7 GND	--	7 GND
8 GND	Purple	8 GND
9 GND	--	9 GND
10 GND	--	10 GND
11 NC	--	11 Error Out
12 BL_ON	Brown	12 ENA
13 DIM	Black	14 Ext PWM
14 NC	--	13 DIM

7. Trouble shooting

1. Fault clearance

Before calling your dealer or service center for assistance, check the matters below once again.

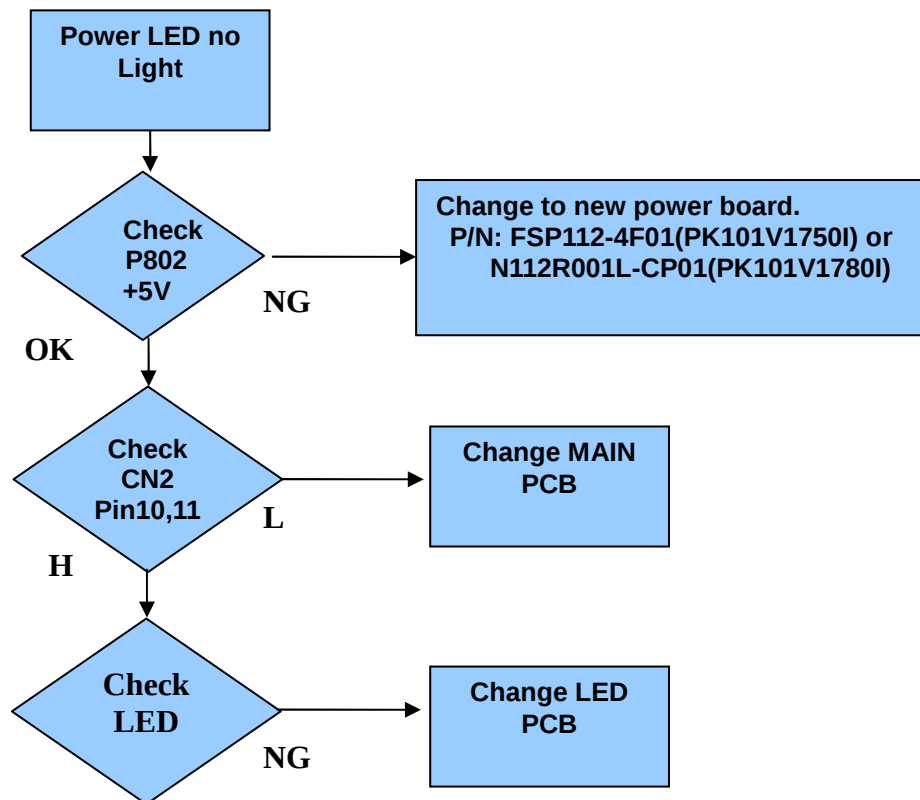
- (1) Make sure you have connected LCD TV to your equipment as described in the section "CONNECTING LCD TV".
- (2) Check cable connection. Verify that all external equipment and power cord are properly connected.
- (3) Verify that all power is switched on.
- (4) If LCD TV still dose not produce an image, re-start the external equipment.
- (5) If the image still dose not appear, unplug LCD TV from the external equipment and check the external equipment. The problem may be with your graphics controller rather than with LCD TV. (When you reconnect LCD TV, remember to turn the external equipment and TV off before you power up LCD TV. Power the equipment back on in order of LCD TV and external equipment.)
- (6) If the problem still exists, check the following chart.

Problem	Try these Solutions
NO POWER	• Plug this LCD TV into the AC outlet. • Press POWER button on side control or on Remote Control to turn on LCD TV. • Check POWER Indicator. If this indicator blank, this TV has getting trouble.
Remote Control dose not work	• Check the batteries. • Make sure nothing is between the Remote Receiver and the Remote Control. • Make sure you are not too far from LCD TV when using Remote Control. • Maximum operating range is 5m. • Is direct sunlight or strong artificial light shining on LCD TV's Infrared Remote Receiver? Eliminate the light by closing curtains, pointing the light in a different direction, etc.
No image	• Check the connection between the external equipment and LCD TV. • When turning LCD TV on, it takes a few seconds to display the image. • Check the system that you select is corresponding with the external equipment or the video equipment. • Make sure the temperature is not out of the Operating Temperature (0°C ~ 50°C). • Turn off power, then turn on again, re-start LCD TV.
No sound	• Check Audio cable connection from Audio input source. • Adjust the Sound System. • Press VOLUME (+) button. • Press MUTE button.
There are tiny black points and/or bright point on the TV	• Dark or bright points of light (red, green, or blue) may appear on the screen. This is a characteristic of the LCD panel, not a malfunction of the LCD TV. • LCD panel is produced with very high accuracy technology. There is 99.99% or more dot pixel, but there is also 0.01 % or less of dot pixel lack or dot pixel that is constantly lighted. This is not defect. • Regarding LCD panel characteristic, it may occur picture remain (look like a mirror) when the screen is changed if it displays same screen for a long time. Changing the picture or turn-off the power supply may recover. • Stripe pattern (more, interference stripes) may show up on the screen depends on the reflected picture.
Abnormal color of image	• Adjust the value of color. • Select different color system.

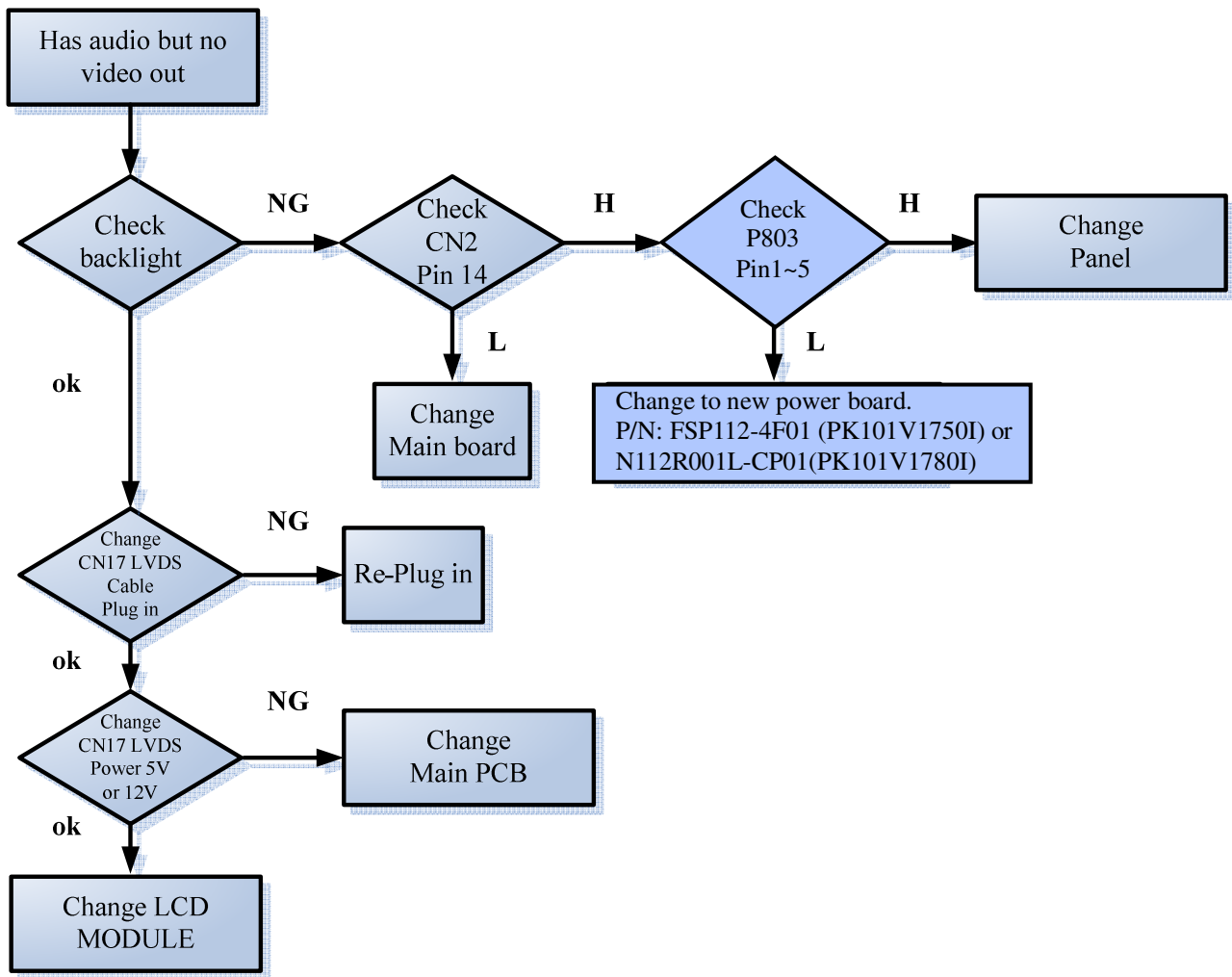
2. Troubleshooting guide

The flow chart shown below will help you to troubleshoot your Television set with it doesn't display normally. Each procedure offers a simple way to check for system errors. Before starting, ensure that there is a signal in and that the Television is turned on.

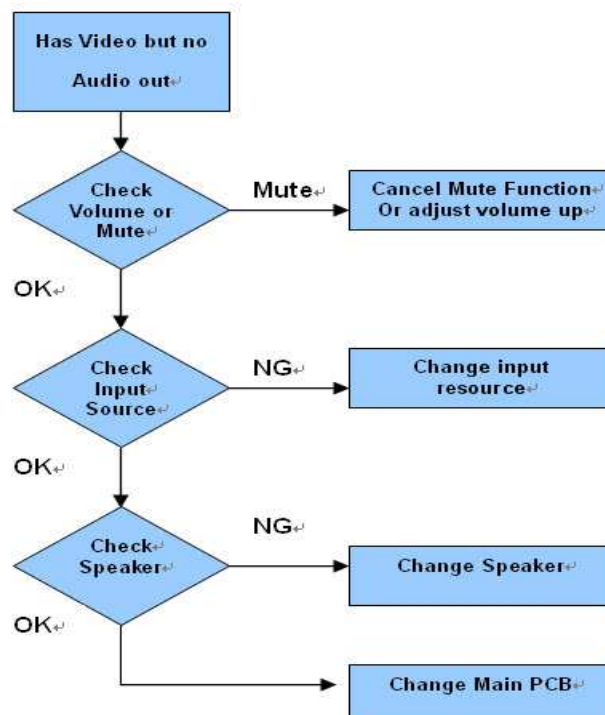
2-1 Power LED no light



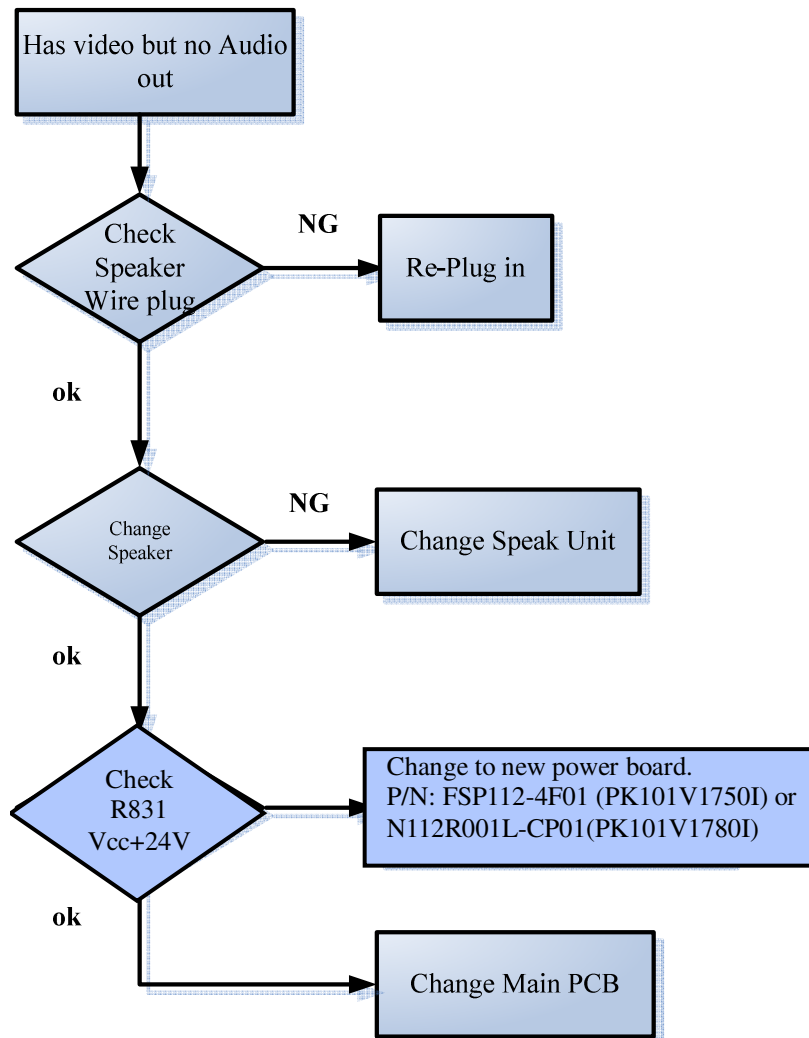
2-2 Has audio but no video out



2-3 Has video but no audio out step 1

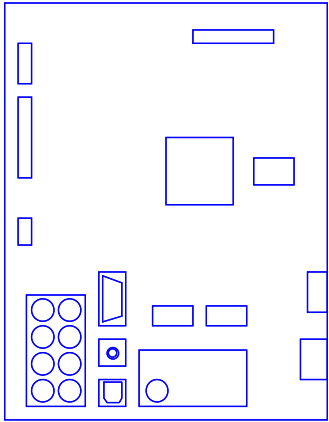


2-4 Has video but no audio out step 2



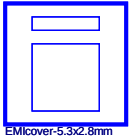
8. SCHEMATIC DIAGRAM ELECTRON-32"

PCB1



VTV-L42612 REV.0

E1



FW1

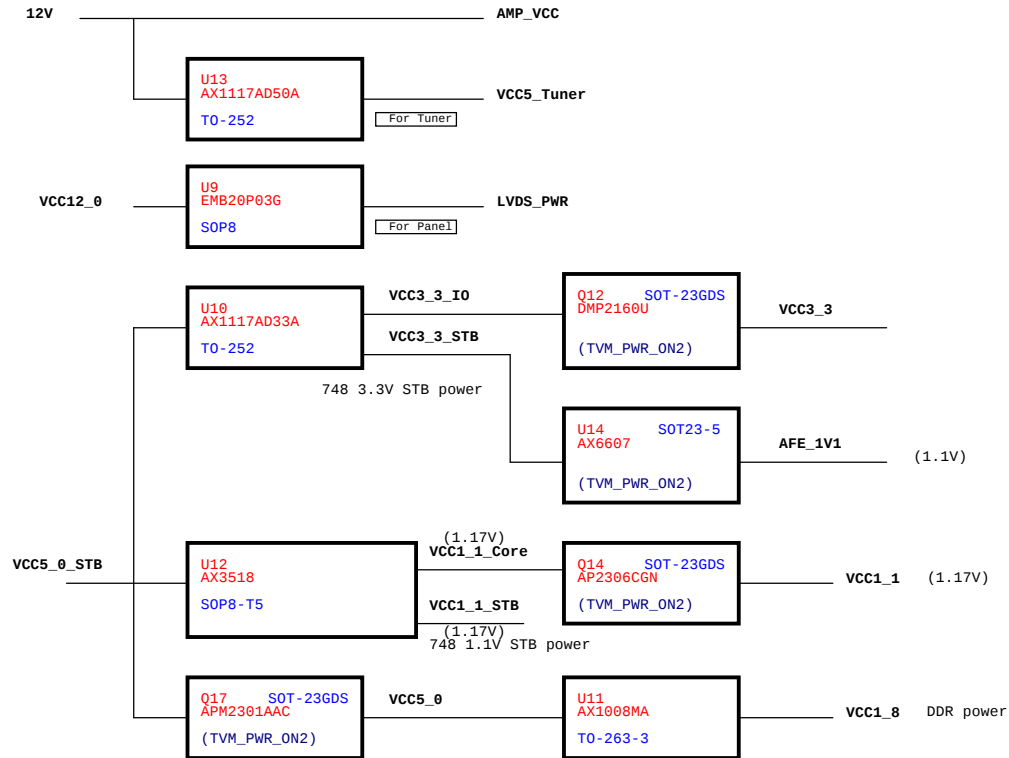


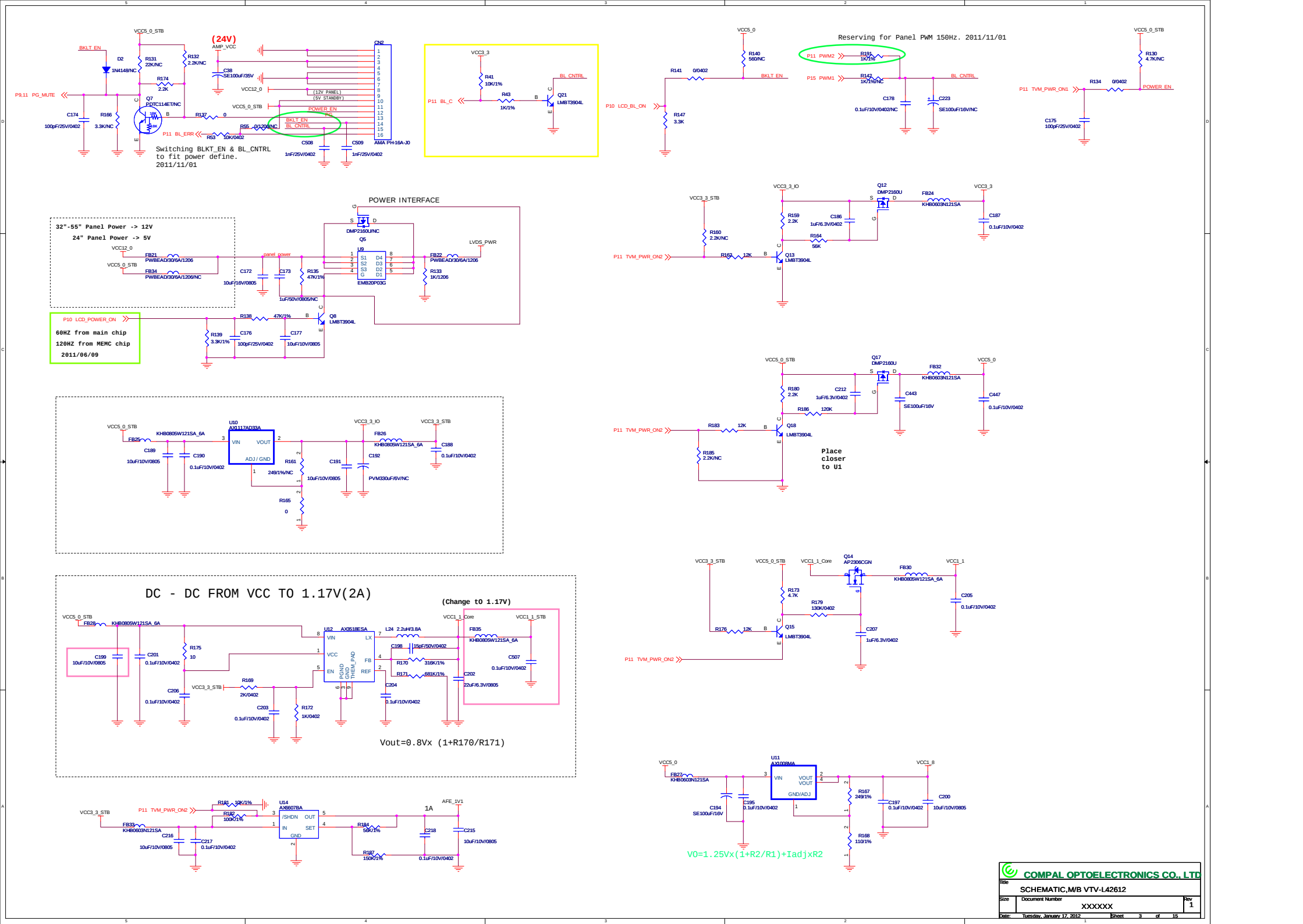
Stuffing Options

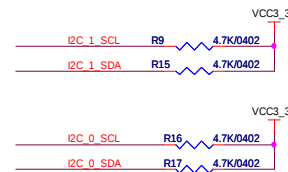
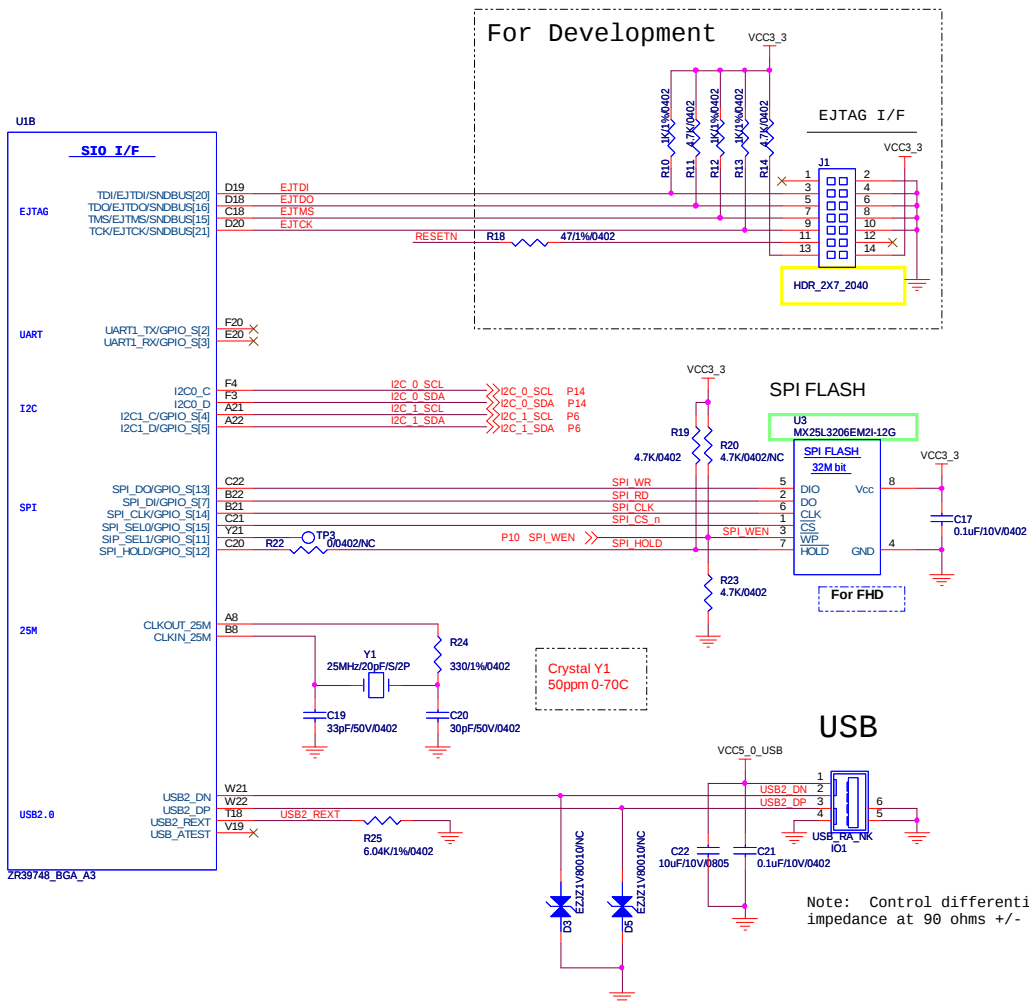
- A)
- B)
- C)
- D)

Note: * - Default setting.

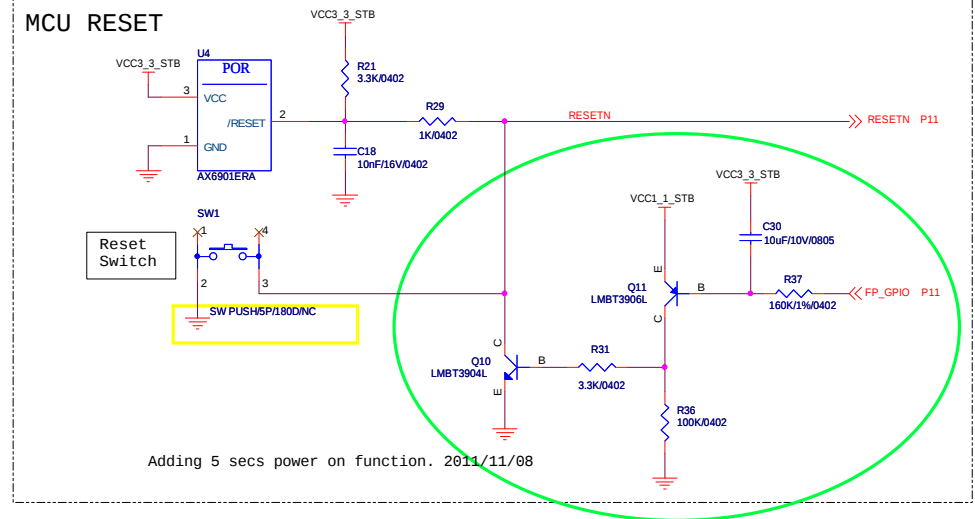
ZR39748 Power Tree (60Hz)



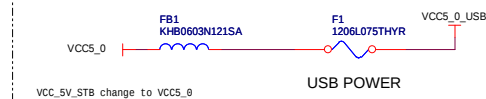


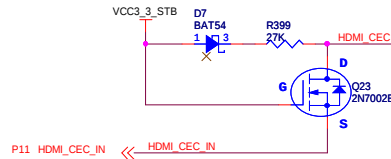
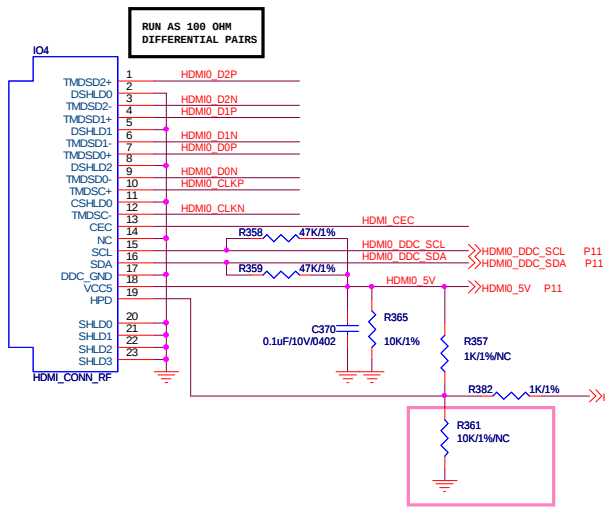


MCU RESET

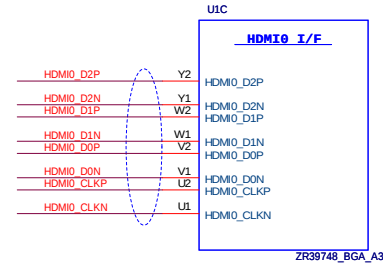


USB Power Control

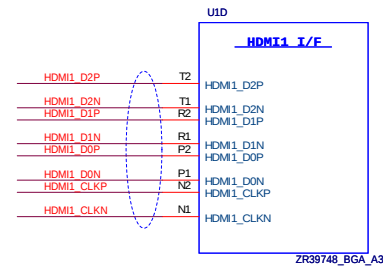




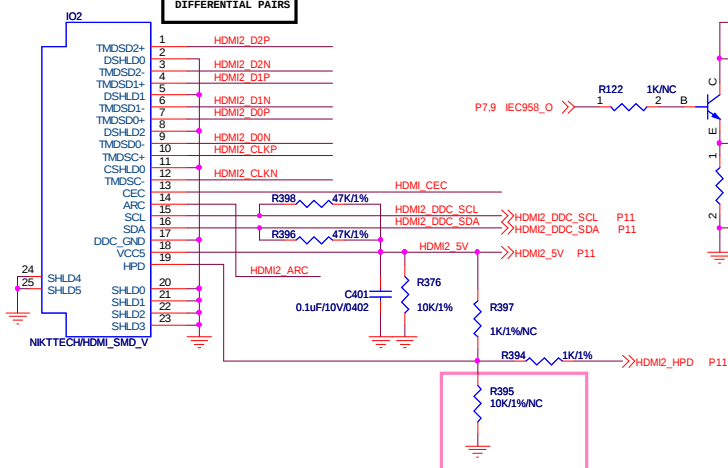
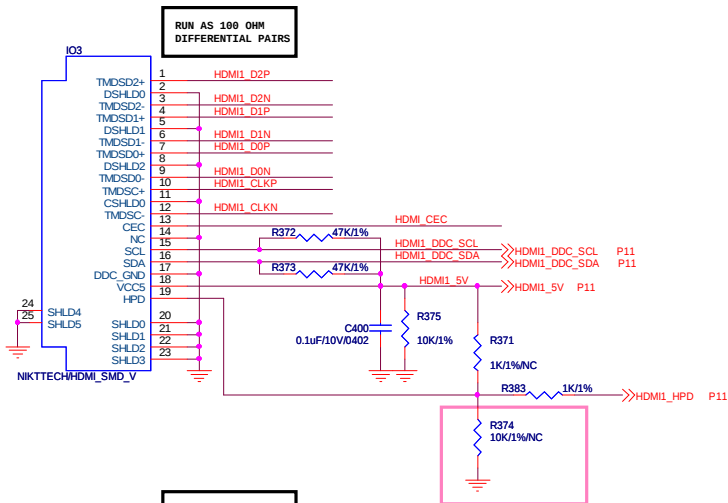
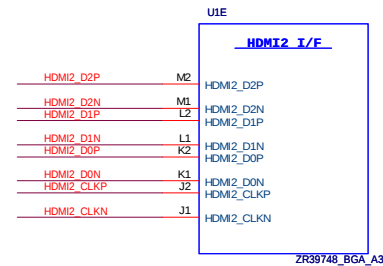
Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs



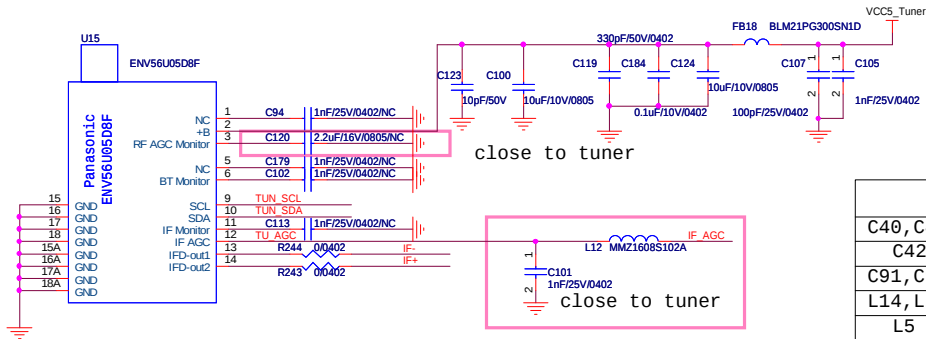
Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs



Run as 50 Ohm Single Ended Impedance with 100 Ohm differential pairs

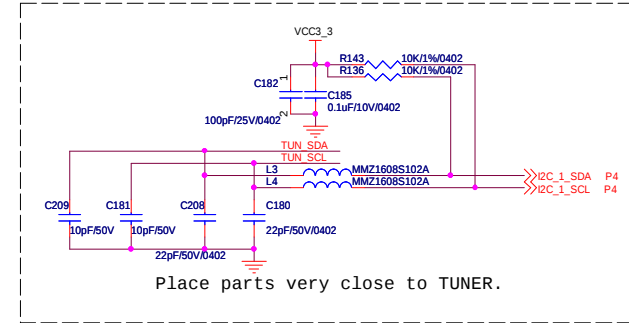


I2C ADDR 0xC2/0xC3

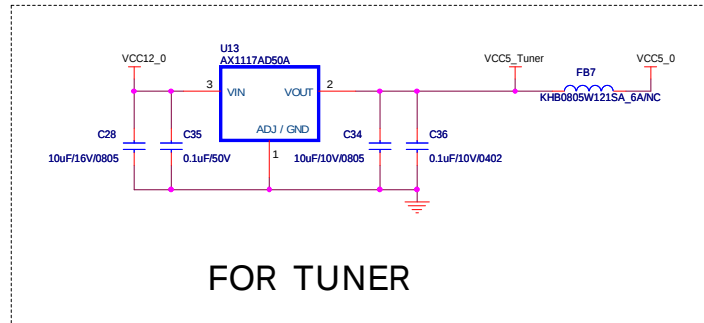


	Panasonic
C40,C41	15pF
C42	68pF
C91,C92	1nF
L14,L29	220nH
L5	150nH

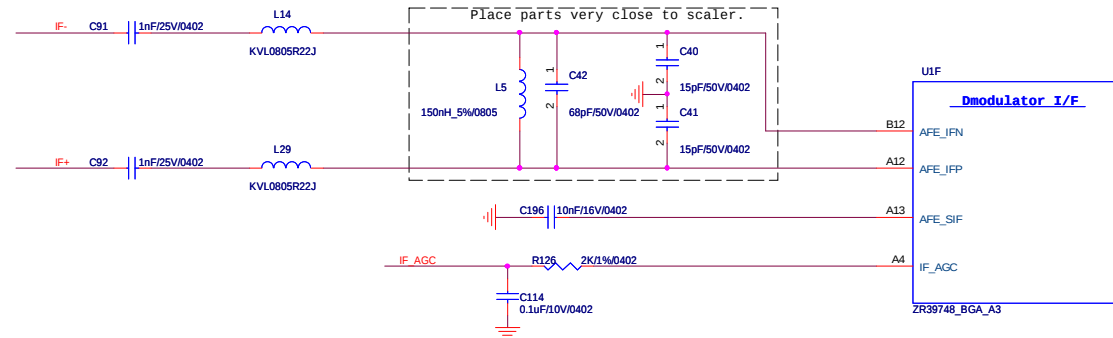
I2C clock - 100KHz(recommended)
I2C Address 0x32/33(AS open)



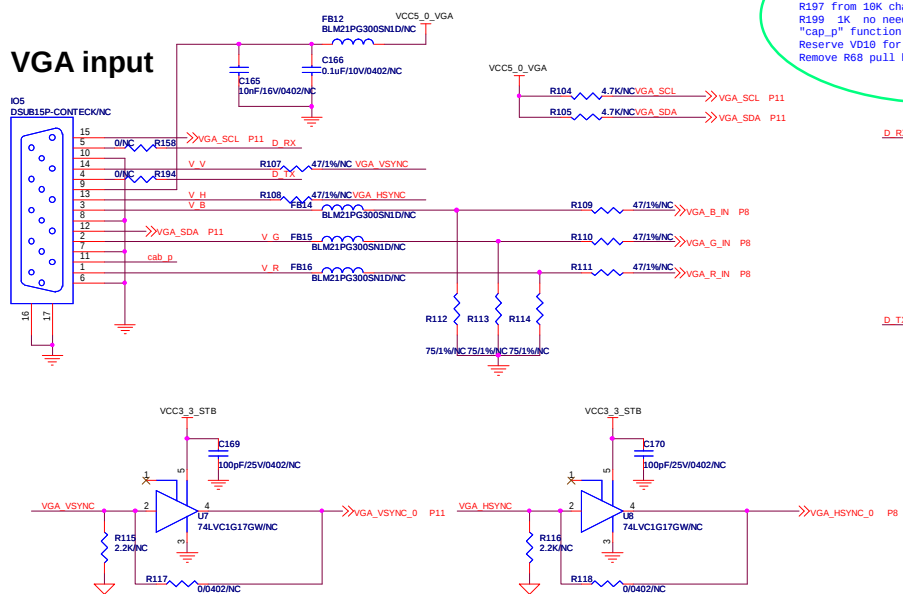
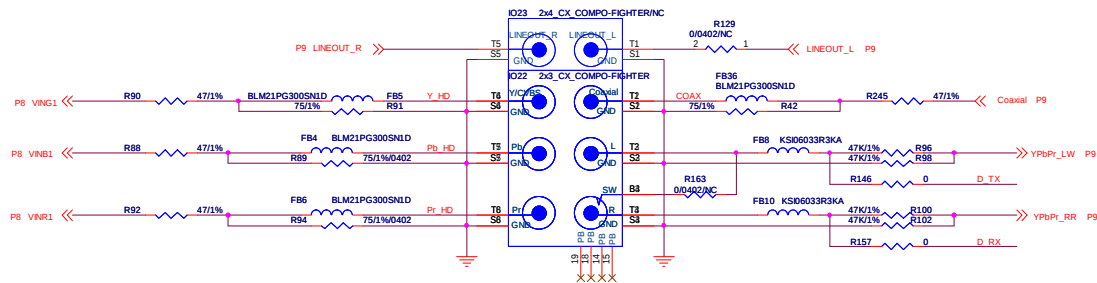
Place parts very close to TUNER.



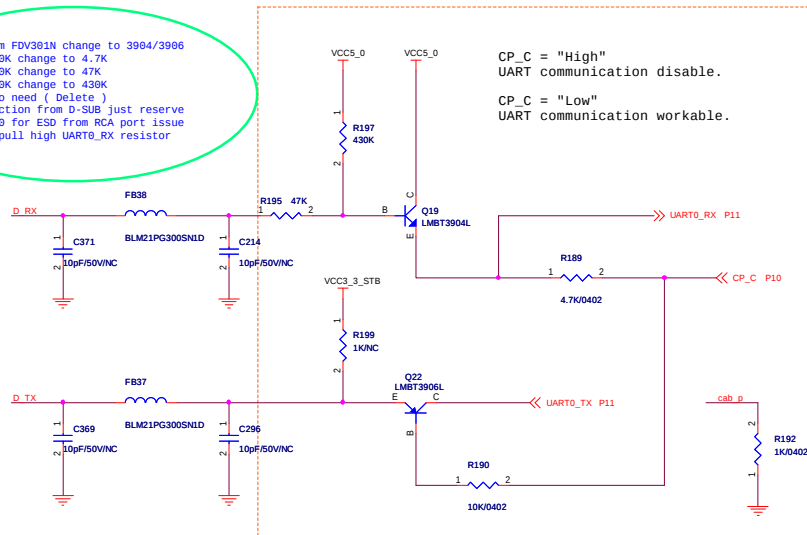
FOR TUNER



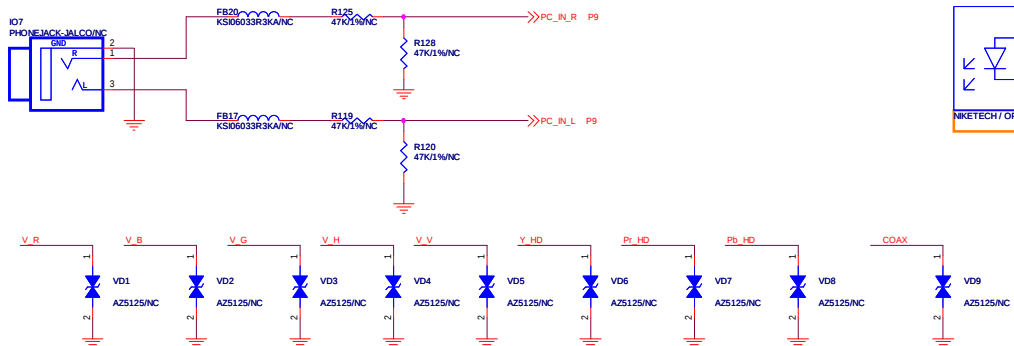
Component input	A/V input
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97. Component input	
98. Component input	
99. Component input	
100. Component input	



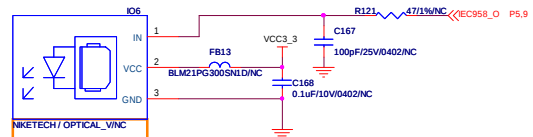
Q19/Q22 from FDV301N change to 3904/3906
R189 from 10K change to 4.7K
R195 from 10K change to 47K
R197 from 10K change to 430K
R199 1K no need (Delete)
"cap_p" function from D-SUB just reserve
Reserve VD10 for ESD from RCA port issue
Remove R68 pull high UART0_RX resistor

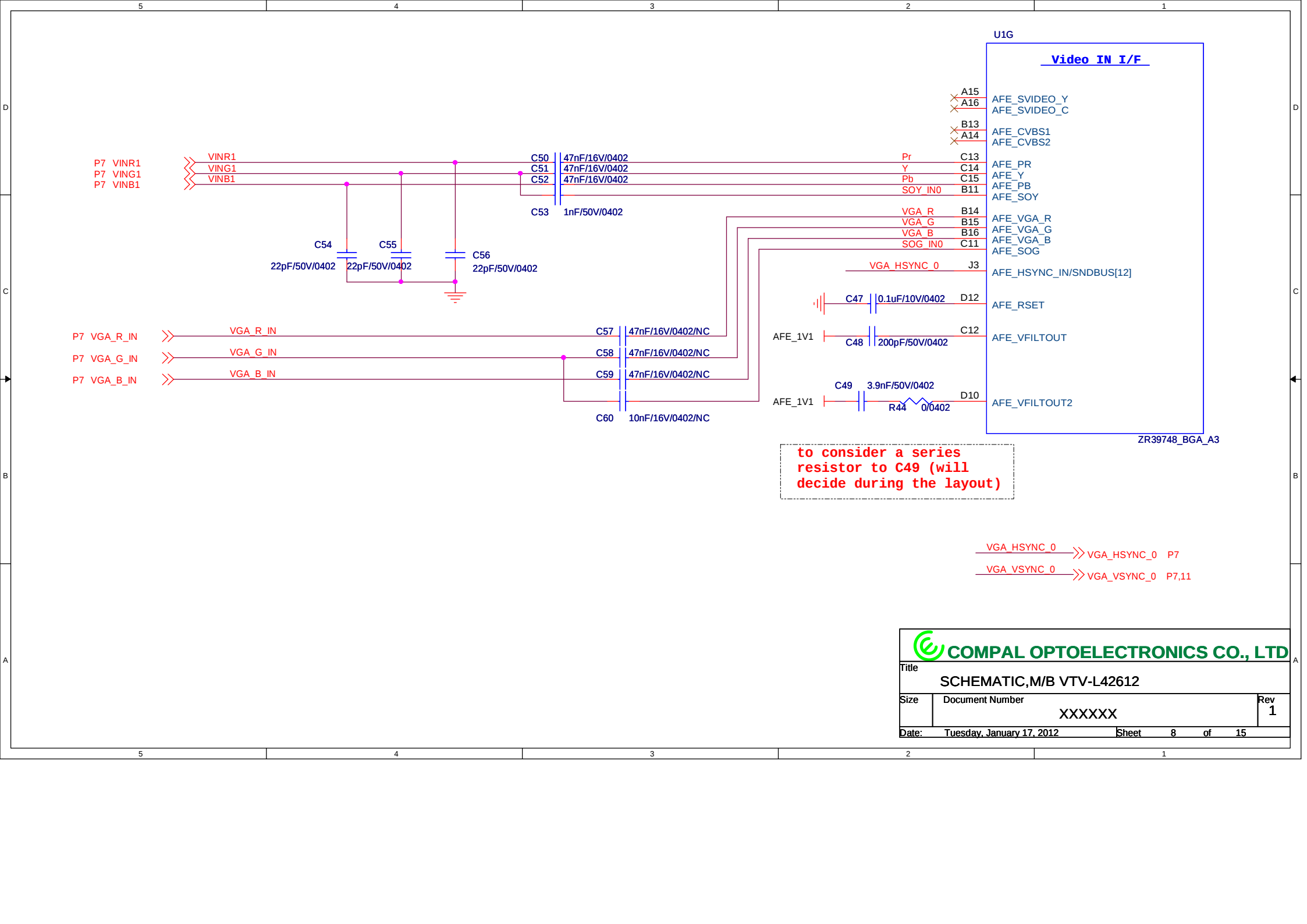


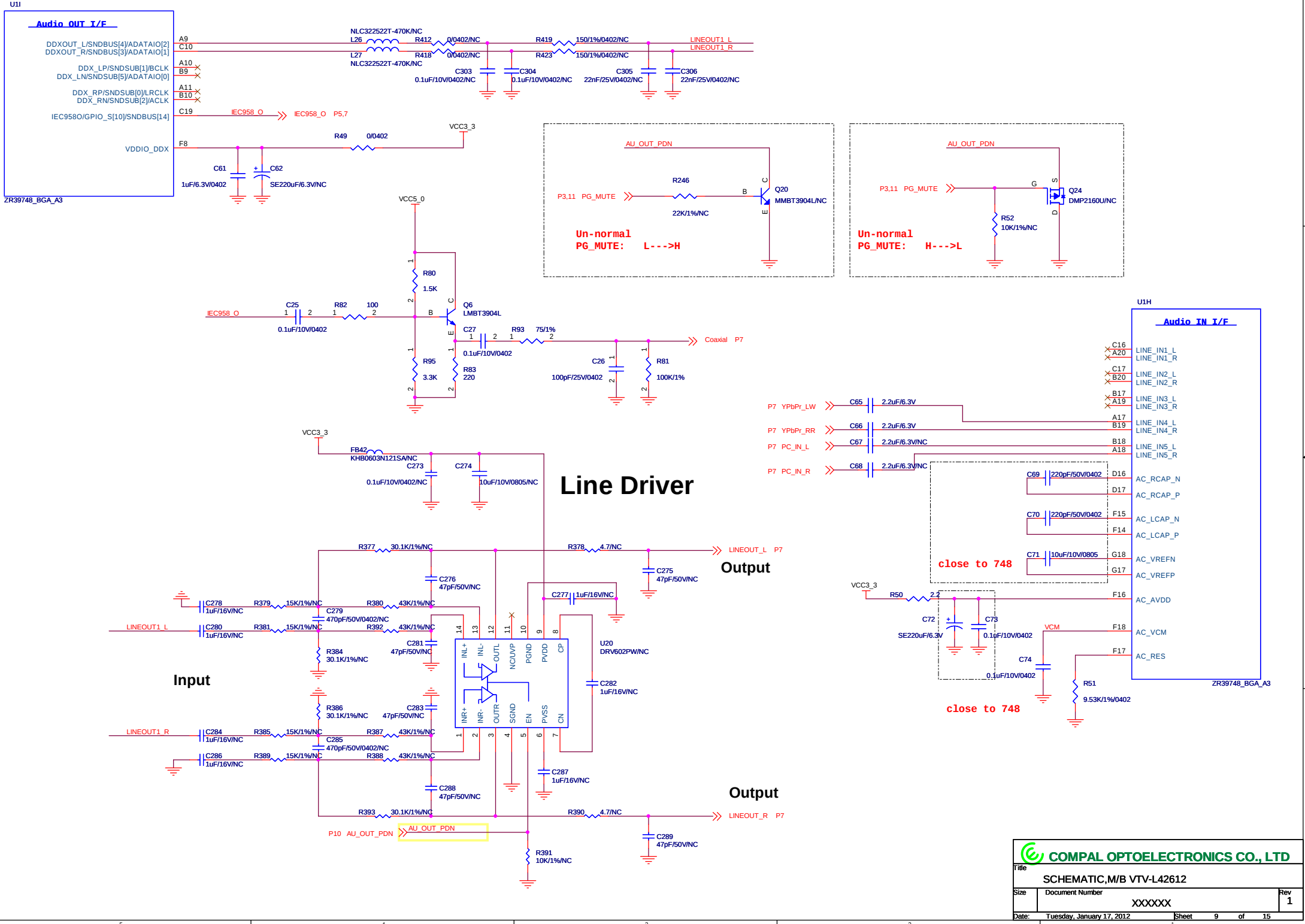
VGA Audio input



SPDIF out



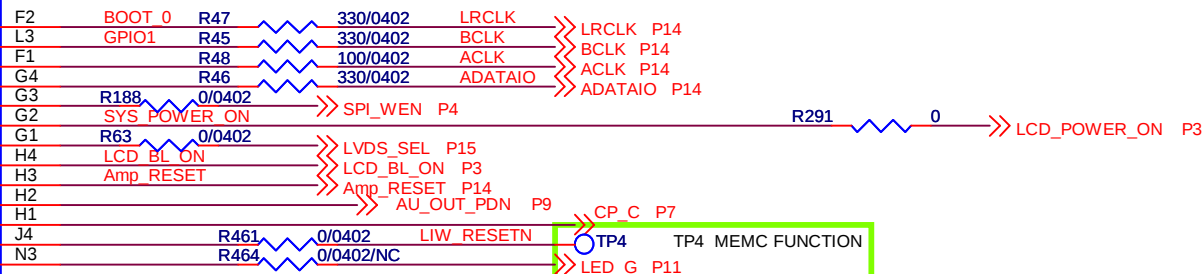




U1K

GPIO I/F

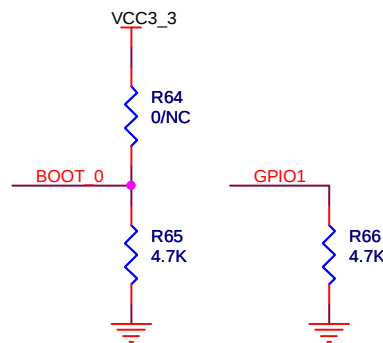
GPIO_P0/SNDBUS[0]/LRCLK
GPIO_P1/SNDBUS[1]/BCLK
GPIO_P4/SNDBUS[4]/ACLK
GPIO_P5/SNDBUS[5]/ADATAIO
GPIO_P6/SNDBUS[6]
GPIO_P7/SNDBUS[7]
GPIO_P8/SNDBUS[8]
GPIO_P9/SNDBUS[9]
GPIO_P10/SNDBUS[10]
GPIO_P11/SNDBUS[11]/PWM2
GPIO_P12/SNDBUS[12]
GPIO_P14/SNDBUS[14]
GPIO_P16/SNDBUS[16]



ZR39748_BGA_A3

Bootstrap Configuration:
Please note: this section can not be removed

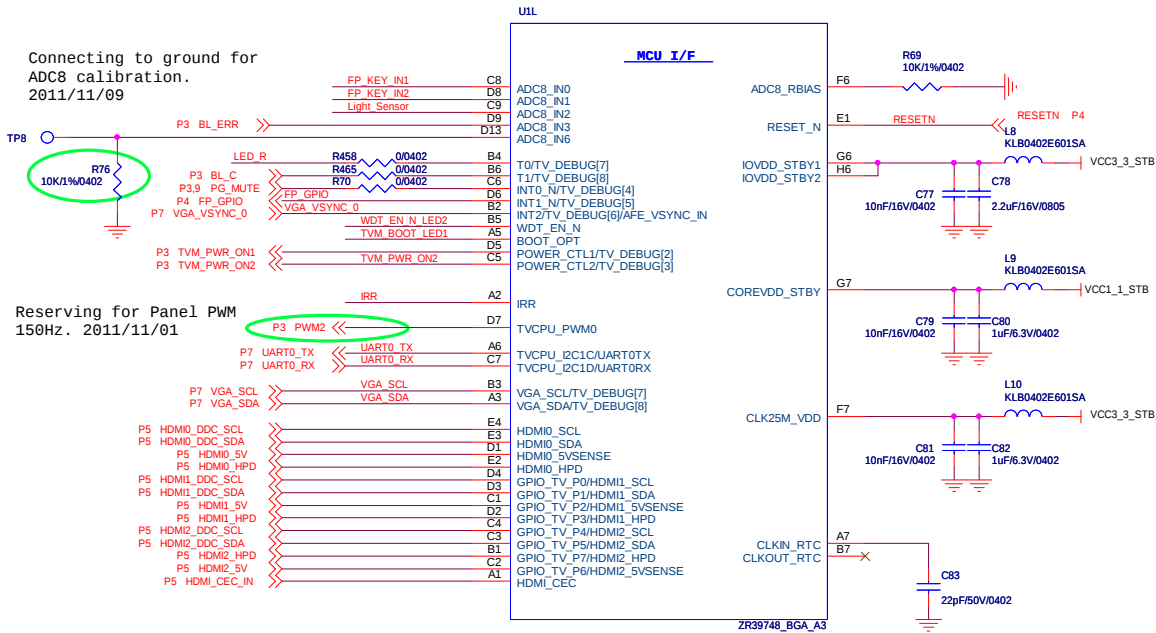
BOOT_0=0 boot from SPI
BOOT_0=1 boot from UART



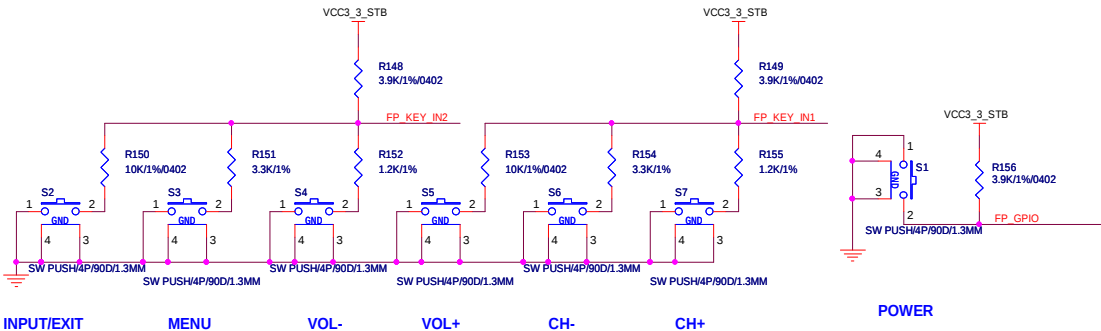
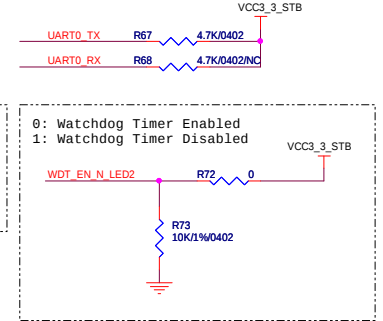
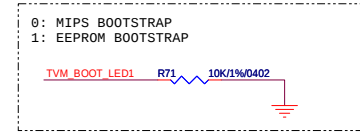
Placement on TOP_Layer

Connecting to ground for
ADC8 calibration.
2011/11/09

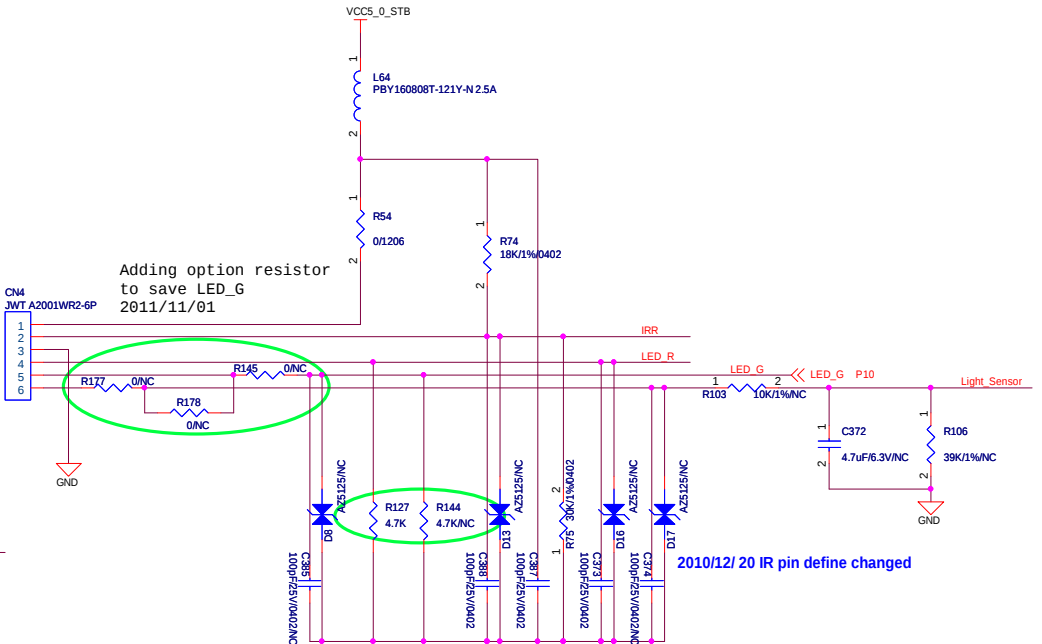
Reserving for Panel PWM
150Hz. 2011/11/01

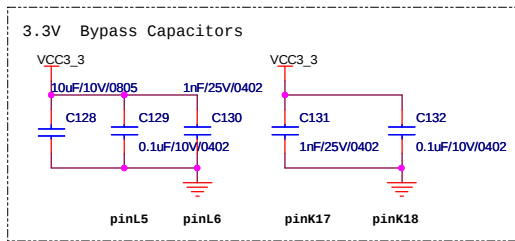


Ask Chris change the ball
name to BOOT_OPT, WDT_EN_N,
do not confuse customer

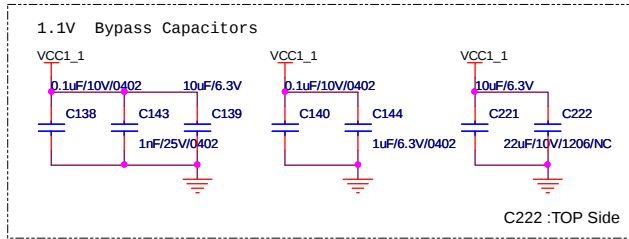
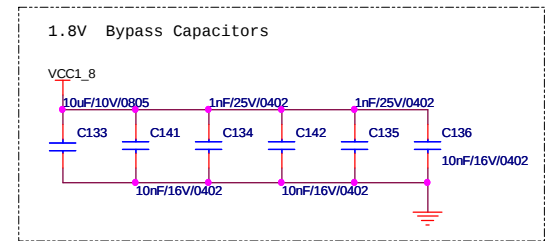


Adding option resistor
to save LED_G
2011/11/01

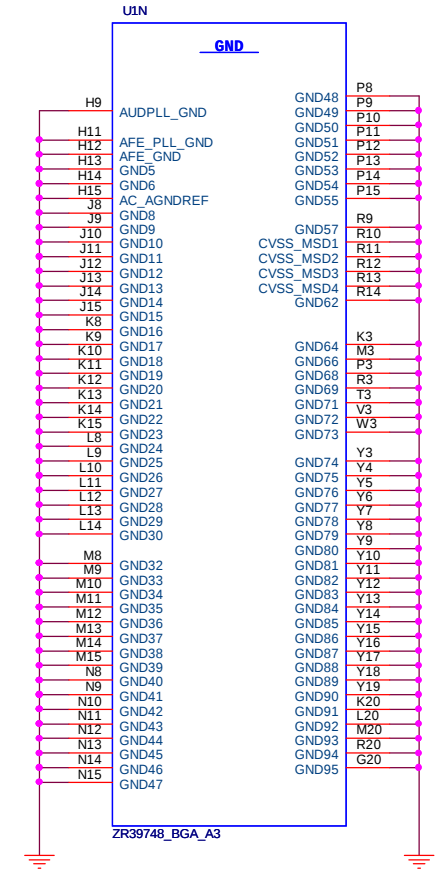
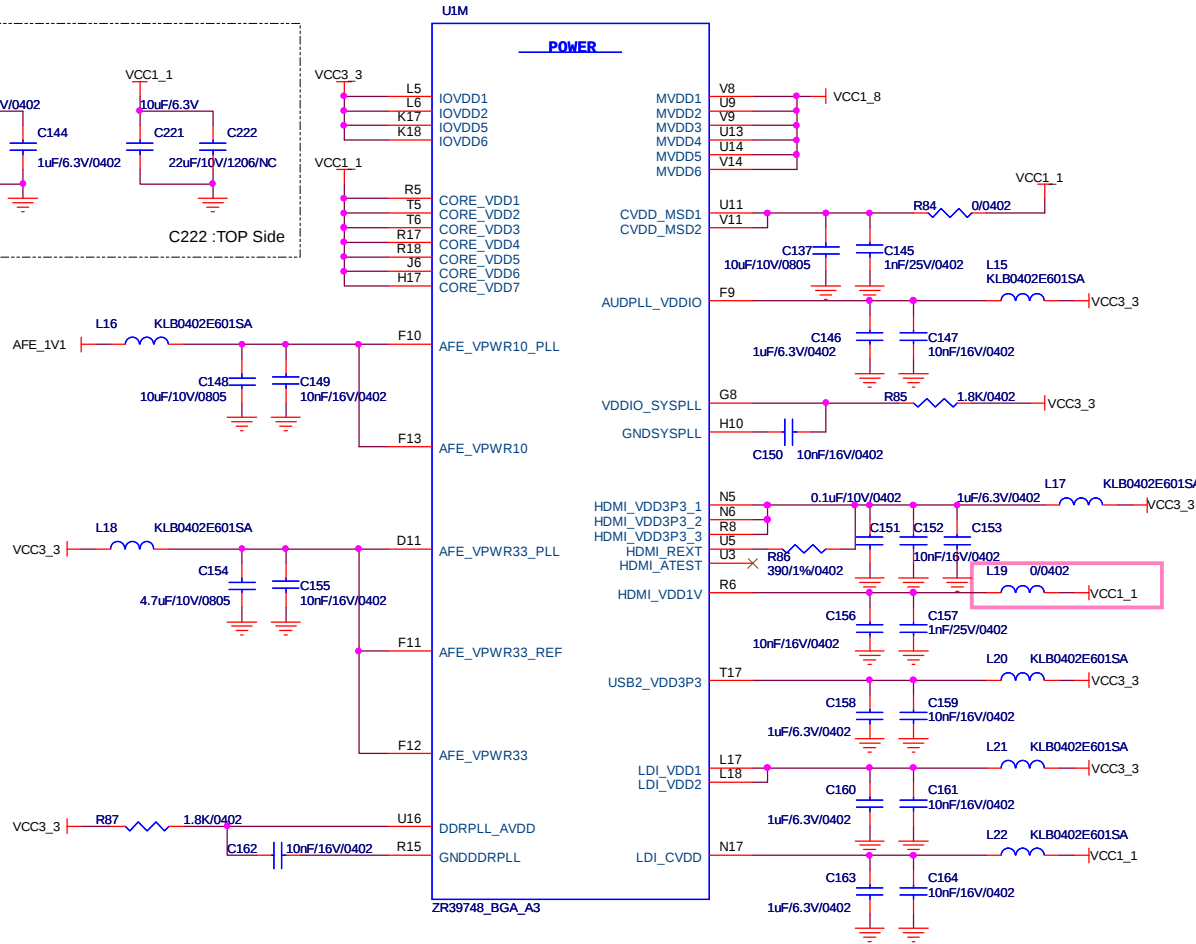


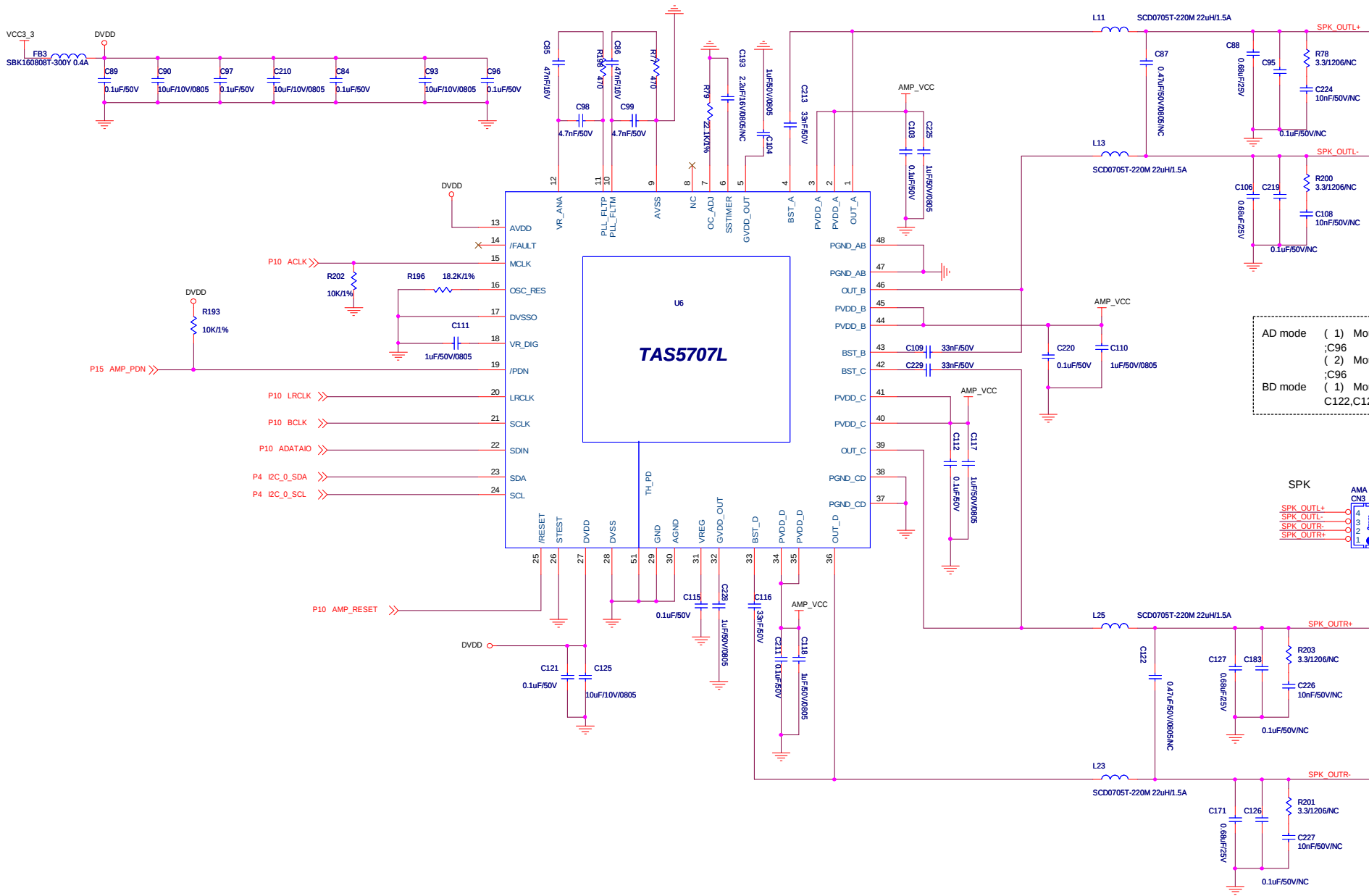


place C129 and C130 close to balls L5 and L6, and place C131 and C132 close to balls K17 and K18, place C128 between the 2 pairs



All small size capacitors must close to chip.





U1J

LVDS & TCON I/F

LVDS

LVDS_D00_N	L22	LVDS_D00_N
LVDS_D00_P	L21	LVDS_D00_P
LVDS_D10_N	M22	LVDS_D10_N
LVDS_D10_P	M21	LVDS_D10_P
LVDS_D20_N	N22	LVDS_D20_N
LVDS_D20_P	N21	LVDS_D20_P
LVDS_D30_N	P22	LVDS_D30_N
LVDS_D30_P	P21	LVDS_D30_P
LVDS_CO_N	K22	LVDS_CO_N
LVDS_CO_P	K21	LVDS_CO_P
LVDS_D40_N	R22	LVDS_D40_P
LVDS_D40_P	R21	LVDS_D40_P
LVDS_D50_N	P20	LVDS_D50_N
LVDS_D50_P	E22	LVDS_D50_P
LVDS_D0E_N	E21	LVDS_D0E_P
LVDS_D0E_P	F22	LVDS_D1E_N
LVDS_D1E_N	F21	LVDS_D1E_P
LVDS_D1E_P	D22	LVDS_CE_N
LVDS_CE_N	D21	LVDS_CE_P
LVDS_CE_P	G22	LVDS_D2E_N
LVDS_D2E_N	G21	LVDS_D2E_P
LVDS_D3E_N	H22	LVDS_D3E_N
LVDS_D3E_P	H21	LVDS_D3E_P
LVDS_D4E_N	J22	LVDS_D4E_N
LVDS_D4E_P	J21	LVDS_D4E_P
LVDS_D5E_N	J20	LVDS_D5E_N
LVDS_D5E_P	H20	LVDS_D5E_P

LVDS_REXT
LVDS_ATEST

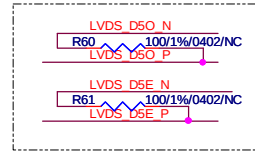
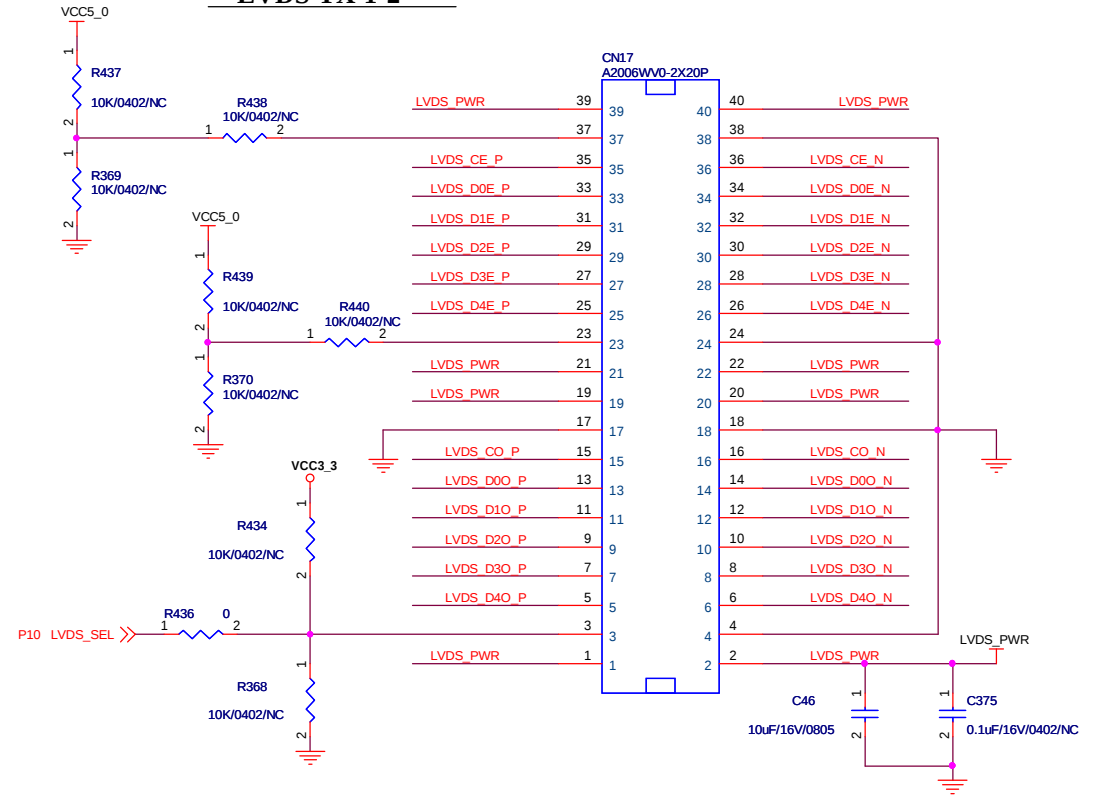
PWM/GPIO_S[16]

PWM1 >> PWM1 P3

TCON

STH1/SNDBUS[20]	U21	X
RVS/SNDBUS[17]	W19	X
TP/SNDBUS[19]/TAPSEL	V22	X
STV1/GPIO_S[9]	T21	X
CPV1/SNDBUS[22]	V20	X
OE1/GPIO_S[8]	T22	X
STH2/SNDBUS[21]	U20	X
STV2/SNDBUS[24]	W20	X
CPV2/SNDBUS[19]/TAPSEL	V21	X
OE2/SNDBUS[23]/TRST	T20	X
GPO/SNDBUS[13]		

ZR39748_BGA_A3

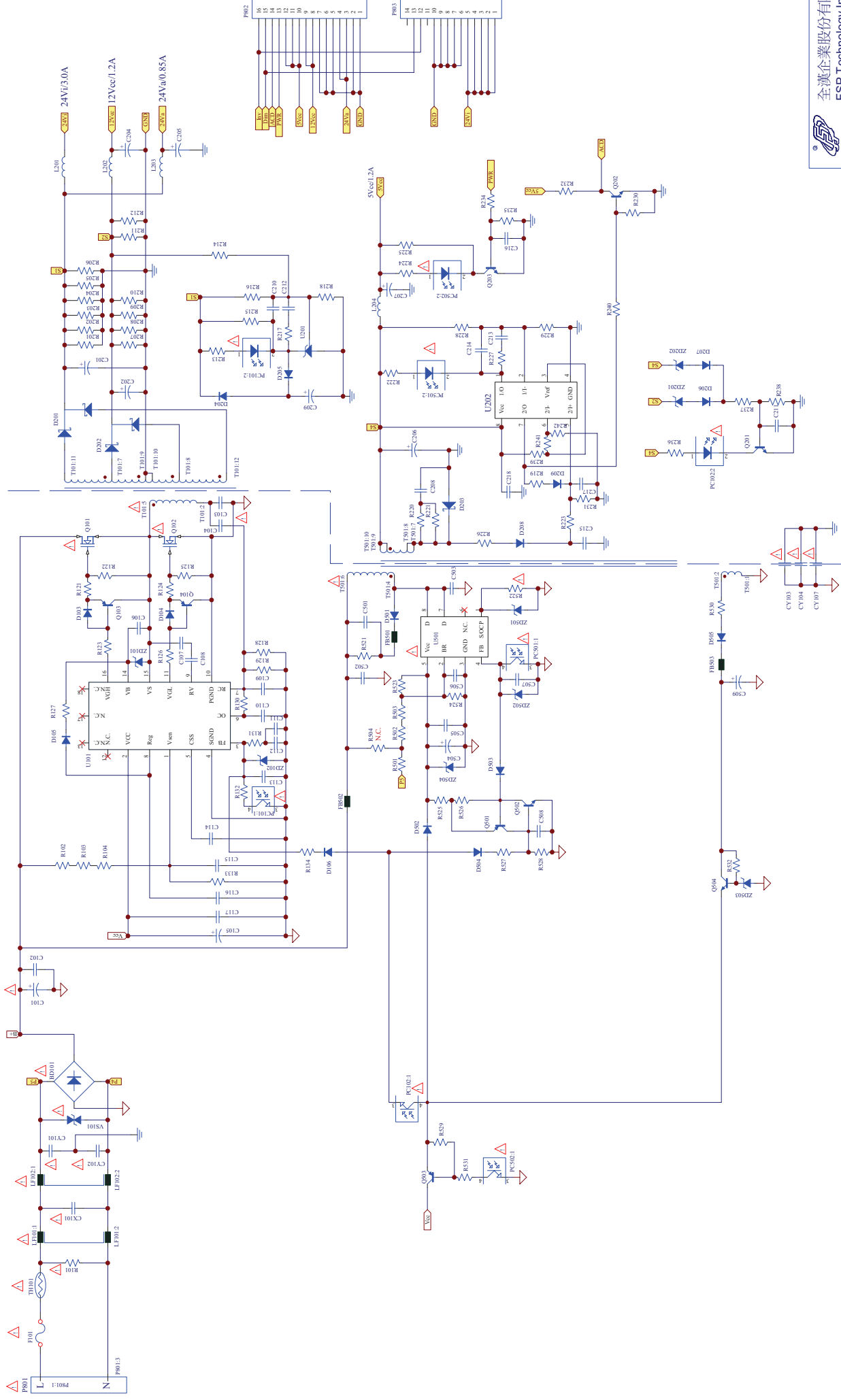
LVDS TX 1-2

SCHEMATIC DIAGRAM

POWER-32"

PRIMARY

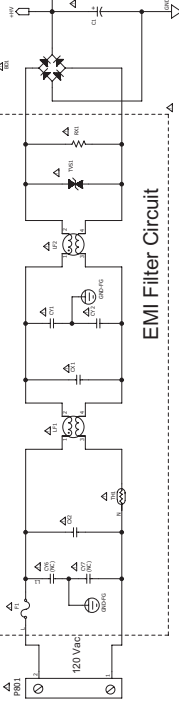
SECONDARY



全漢企業股份有限公司
FSP Technology Inc.

FILE: D:\Layout\Draw\99w\FSPI12-4F01.RL1\FSPI12-4F01.A01.SCH1	DESIGNER: Seven	size: A2	revd:
DATE: 2010/3/30	CHECKED: Anson	PN: 3BS0249410GP	
FILE: D:\Layout\Draw\99w\FSPI12-4F01.RL1\FSPI12-4F01.A01.SCH1	DESIGNER: Seven	TITLE: FSP112-4F01	
DATE: 2010/3/30	CHECKED: Anson	PN: 3BS0249410GP	
FILE: D:\Layout\Draw\99w\FSPI12-4F01.RL1\FSPI12-4F01.A01.SCH1	DESIGNER: Seven	TITLE: FSP112-4F01	

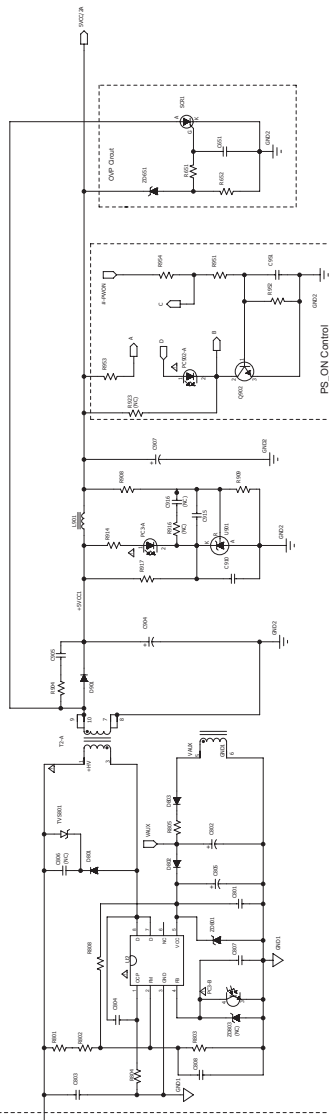
3.2A at 100V/50C



EMI Filter Circuit

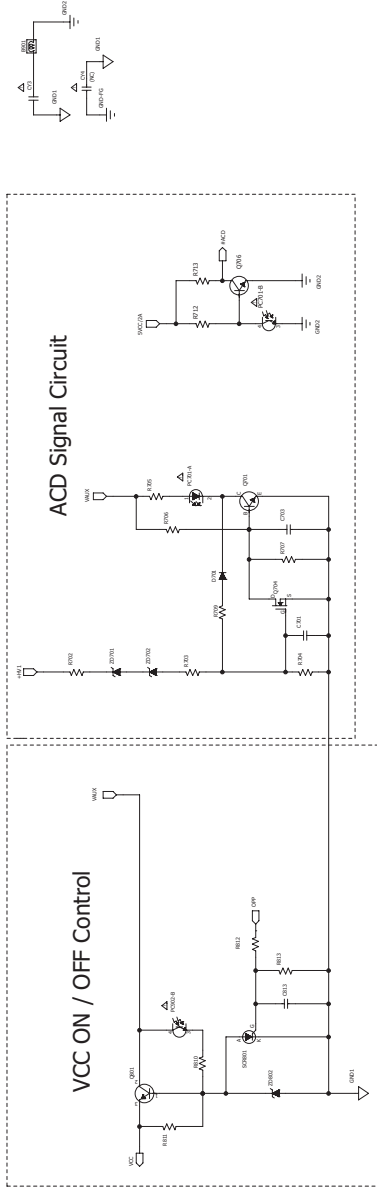
Model Name: N12R001L
AC INPUT: 120V/2.3A/60Hz
DC OUTPUT:
SW: 1.2A
VOUT: 5V
IOUT: 1.2A
24W: 0.5A
24W: 3.0A

+5VS Standby Power (8.9)



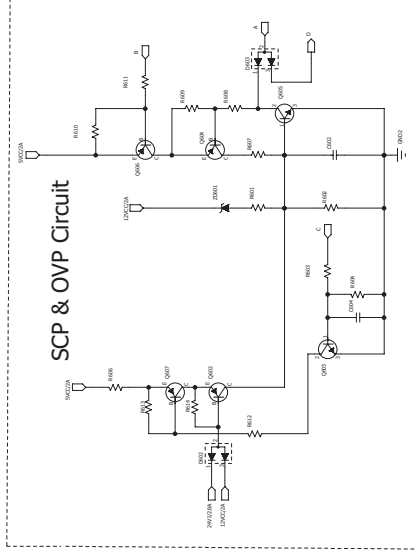
PS ON Control

ACD Signal Circuit

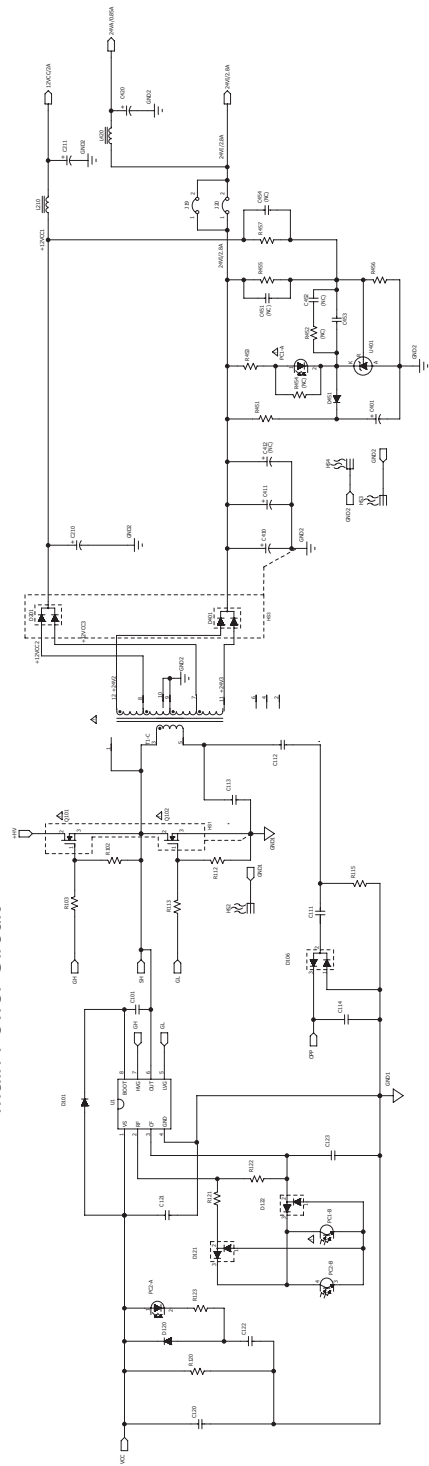


VCC ON / OFF Control

SCP & OVP Circuit



Main Power Circuit



Chicony
POWER SUPPLY

Apv By: Martin_U
Chk By: Arthur_Wu

Model: <MODEL>
UPIN: N12R001L

Sheet: LCD-TV
Draw By: Eason_Chu

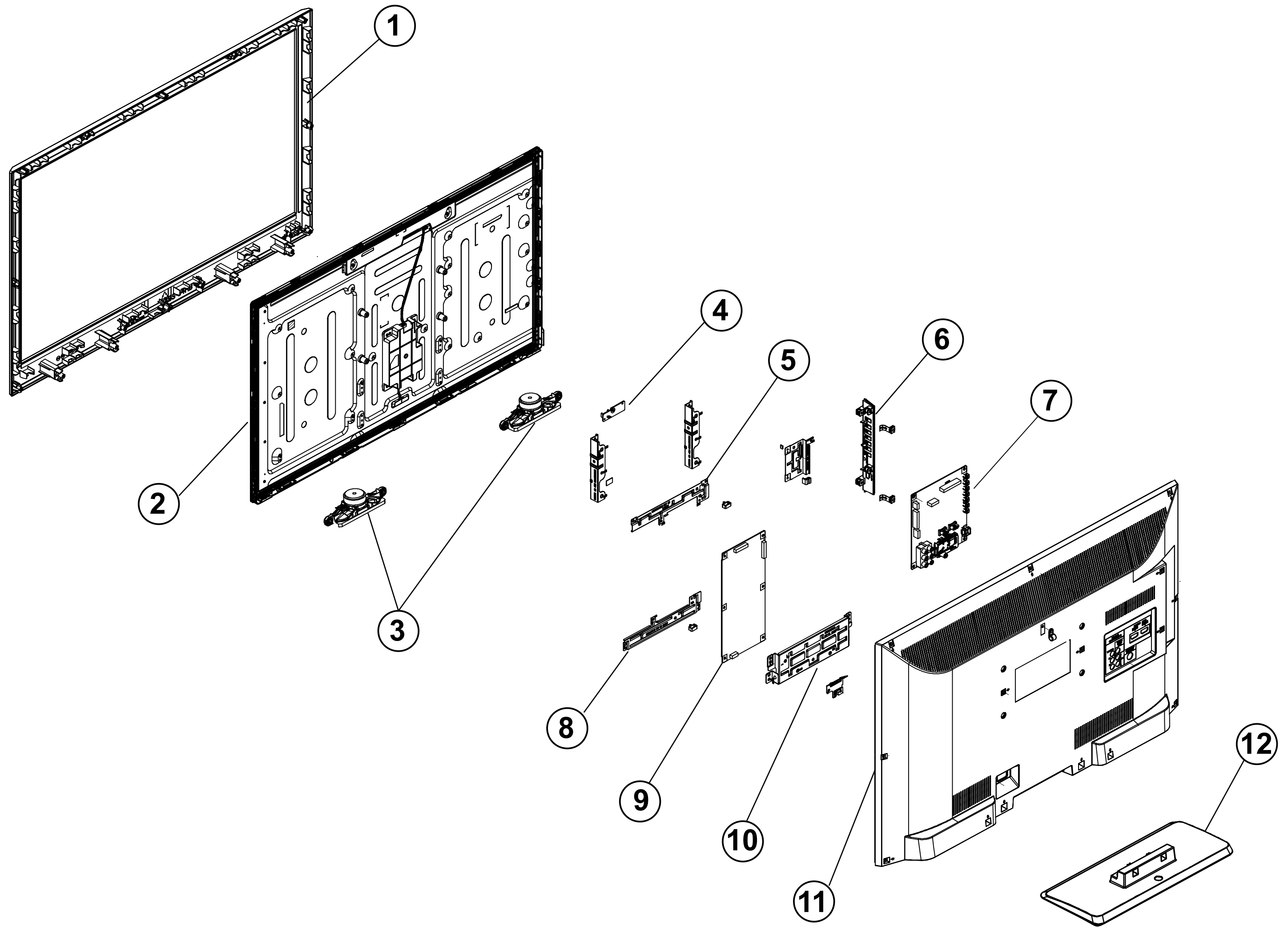
Customer: Compal
Page: 1 of 2
Rev: X02

Spec: D
Date: 2010.04.02

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It is not to be distributed outside of Chicony Power
except as authorized by Chicony Power

APPENDIX-A: Main assembly**DP32242****Version:00**

REF. No.	DESCRIPTION	PARTS No.		REMARK
		CHASSIS No. : SSD32TAA10I		
1	FRONT CABINET	CLAPSD32T010I	1	
2	LCD MODULE	CLAC6VA3213R2	1	
3	SPK SET(85d)(PIN20d)	CLCG100509I0I	2	
4	PCBA IR/B	CL454C3M69L01	1	
5	POWER PCB BRKT TOP	CLECDSD32T060I	1	
6	KEY PLATE	CLFASD32T040I	1	
7	MAIN PCB	CLAMSD32T020I	1	
8	POWER PCB BRKT BOTTOM	CLECDSD32T040I	1	
9	POWER MODU	LPK101V1750I	1	
10	BOTTOM BRKT	CLECDSD32T010I	1	
11	BACK COVER ASSY	CLAPSD32T020I	1	
12	BASE ASSY	CLAPSD32T030I	1	
13	REMOTE CTRL	CLPK11V01700I	1	
14	USER'S MANUAL	CLHDA69D3200I	1	
15	EPS FORM(TOP LEFT)	CLFJSD32T010I	1	
16	EPS FORM(TOP RIGHT)	CLFJSD32T020I	1	
17	EPS FORM(BOTTOM LEFT)	CLFJSD32T030I	1	
18	EPS FORM(BOTTOM RIGHT)	CLFJSD32T040I	1	
19	PE BAG for TV	LHK3PC32010I	1	
20	PE BAG for STAND	CLHK3TS26000I	1	
21	CARTON	CLHB4SD32001I	1	
22	ZIPPERED BAG for accessories	CLHK3OL77801I	1	
23	PWR CORD(S)	CLGA05001190I		



INSTALLATION

POSITIONING THE LCD HDTV



Always use a firm-flat surface when positioning your HDTV. Do not position the unit in a confined area. Allow adequate space for proper ventilation.

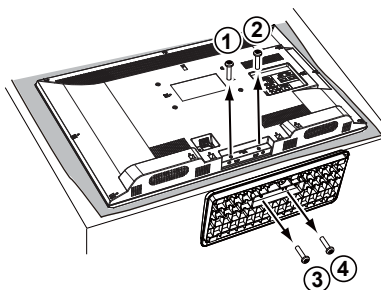
CAUTION INSTALLING STAND

- Handling with two people is recommended when installing.
- When holding (moving or lifting) the LCD Display, hold the display's body. Do not handle the LCD TV by holding the attached accessory parts (speakers), otherwise it may result in damage
- Before installing, provide a desk (or a part of it) which is strong enough to support the weight of the LCD TV and its stand. The desk must be larger than the LCD Display's screen size. The desk's surface must be flat and covered with soft material (such as a blanket) for protecting the screen surface.
- Before putting the LCD Display on the desk, make sure there is no object on it. Leaving any object under the screen may cause damage on the screen.
- The LCD TV with this stand should be installed on a flat and level place. Do not place it on non flat, unlevel or unstable cart or stand. The display may fall, causing not only serious damage to the products but serious injury to a person.

For correct installing, mounting and uninstalling of the LCD TV Stand, it is strongly recommended to use a trained, authorized dealer. Failure to follow correct procedures could result in damage to the equipment or injury to the installer.

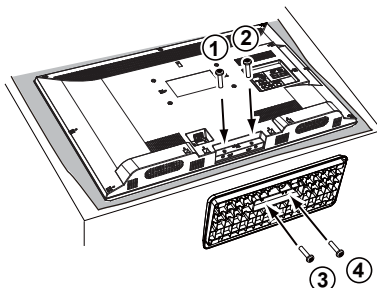
Uninstalling Stand

- 1 Place the LCD TV screen facing down on a flat surface with soft materials (such as a blanket) for protecting the display screen.
- 2 Remove screws in 4 holes with screw driver.



Installing Stand

- 1 Place the LCD TV on a flat surface place where maintained with soft materials (such as a blanket) for protecting the display screen.
- 2 Secure the stand to the TV with 4 screws.

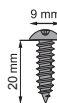
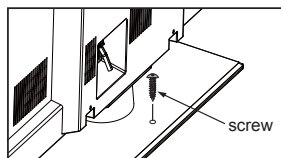


Warning

To prevent injury, this apparatus must be securely attached to the floor / wall in accordance with the installation instructions.

This TV could fall over if it is pushed , pulled or knocked down. Use the screw to secure TV to the furniture

Screw type:



CANADA SERVICE MANUAL CHANGE LIST

[illegible]